GS700AT Series Smart Switch Software Administration Manual

NETGEAR, Inc.
4500 Great America Parkway
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- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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The NETGEAR GS700AT Series Gigabit Smart Switch is compliant with the following EU Council Directives: 89/336/EEC and LVD 73/23/EEC. Compliance is verified by testing to the following standards: EN55022 Class A, EN55024 and EN60950-1.

Warning: This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take appropriate measures.

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This digital apparatus (NETGEAR GS700AT Series Smart Switch) does not exceed the Class A limits for radio-noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

Règlement sur le brouillage radioélectrique du ministère des Communications

Cet appareil numérique (NETGEAR GS700AT Series Smart Switch) respecte les limites de bruits radioélectriques visant les appareils numériques de classe A prescrites dans le Règlement sur le brouillage radioélectrique du ministère des Communications du Canada.

Customer Support

For assistance with installing and configuring your NETGEAR system or for questions or problems following installation:

- Check the NETGEAR Web page at http://www.NETGEAR.com/support
- Call Technical Support in North America at 1-888-NETGEAR. If you are outside North America, please refer to the phone numbers listed on the Support Information Card that was included with your switch.
- Email Technical Support at support@NETGEAR.com.
- Defective or damaged merchandise can be returned to your point-of-purchase representative.

Internet/World Wide Web

NETGEAR maintains a World Wide Web home page that you can access at the uniform resource locator (URL) http://www.NETGEAR.com. A direct connection to the Internet and a Web browser such as Internet Explorer or Netscape are required.

FCC Requirements for Operation in the United States

FCC Information to User: This product does not contain any user-serviceable components and is to be used with approved antennas only. Any product changes or modifications will invalidate all applicable regulatory certifications and approvals

FCC Guidelines for Human Exposure: This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between

the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

FCC Declaration Of Conformity: We, NETGEAR, Inc., 4500 Great America Parkway, Santa Clara, CA 95054, declare under our sole responsibility that the model GS700AT Series Gigabit Smart Switch complies with Part 15 of **FCC Rules.** Operation is subject to the following two conditions: a) This device may not cause harmful interference and b) This device must accept any interference received, including interference that may cause undesired operation."

Product and Publication Details

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About This Manual

The *NETGEAR® GS700AT Series Smart Switch Software Administration Manual* describes how to install, configure, operate, and troubleshoot the GS700AT Gigabit Smart Switch using its included software. This book describes the software configuration procedures and explains the options available within those procedures.

Who Should Use this Book

The information in this manual is intended for readers with intermediate to advanced system management skills.

This document was created primarily for the system administrator who wishes to install and configure the GS700AT Series Smart Switch in a network. This user guide assumes that the reader has a general understanding of switch platforms and a basic knowledge of Ethernet and networking concepts. To install this switch, it is not necessary to understand and use all of its capabilities. Once basic configuration is performed, the switch operates using the remaining factory default parameters. However, a greater level of configuration—anywhere from the basic up to the maximum possible—will allow your network the full benefit of the switch's features. The web interface simplifies this configuration at all levels.

How to Use This Book

This document describes configuration commands for the GS700AT Series Smart Switch software. The commands can all be accessed from the Web interface.

- Chapter 1, "Getting Started with Switch Management" describes how to use the SmartWizard Discovery utility to set up your switch so that you can communicate with it.
- Chapter 2, "Introduction to the Web Browser Interface" introduces the Web browser interface.
- Chapter 3, "Managing System Settings" describes how to configure the System functions.
- Chapter 4, "Configuring Switching Settings" describes how to configure the Switching functions.
- Chapter 5, "Configuring QoS" describes how to configure QoS functions.

- Chapter 6, “Managing Security” describes how to configure security.
- Chapter 7, “Monitoring the Switch” describes how to configure switch monitoring.
- Chapter 8, “Maintenance” describes the firmware upgrade procedure and reset functions.
- Chapter 9, “Online Help” describes how to obtain online help and support.
- Appendix A, “Default Settings” gives GS700AT Series Smart Switch specifications and lists default feature values.

Note: Refer to the product release notes for the GS700AT Series Smart Switch Software application level code. The release notes detail the platform specific functionality of the Switching, SNMP, Config, and Management packages.

Conventions, Formats, and Scope

The conventions, formats, and scope of this manual are described in the following paragraphs:

- **Typographical Conventions.** This manual uses the following typographical conventions:

Italics	Emphasis, books, CDs, file and server names, extensions
Bold	User input, IP addresses, GUI screen text
Fixed	Command prompt, CLI text, code
italics	URL links

- **Formats.** This manual uses the following formats to highlight special messages:

Note: This format is used to highlight information of importance or special interest.

Tip: This format is used to highlight a procedure that will save time or resources.

Warning: Ignoring this type of note may result in a malfunction or damage to the equipment.

	Danger: This is a safety warning. Failure to take heed of this notice may result in personal injury or death.

- **Scope.** This manual is written for the GS700AT Series Smart Switch according to these specifications:

Product Version	GS700AT Gigabit Smart Switch
Manual Publication Date	March 2008

	Note: Product updates are available on the NETGEAR, Inc. website at *http://www.netgear.com/support*.

How to Use This Manual

The HTML version of this manual includes the following:

- Buttons > and < for browsing forwards or backwards through the manual one page at a time.
- A button that displays the table of contents and a button. Double-click on a link in the table of contents or index to navigate directly to where the topic is described in the manual.
- A button to access the full NETGEAR, Inc. online knowledge base for the product model.
- Links to PDF versions of the full manual and individual chapters.

How to Print this Manual

To print this manual, select one of the following options:

- **Printing a Page from HTML**. Each page in the HTML version of the manual is dedicated to a major topic. Select **File > Print** from the browser menu to print the page contents.
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  - Printing a PDF Chapter.
    - Click the *PDF of This Chapter* link at the top left of any page in the chapter you want to print. The PDF version of the chapter you were viewing opens in a browser window.
    - Click the print icon in the upper left of your browser window.
  - Printing a PDF version of the Complete Manual.
    - Click the *Complete PDF Manual* link at the top left of any page in the manual. The PDF version of the complete manual opens in a browser window.
    - Click the print icon in the upper left of your browser window.

Tip: If your printer supports printing two pages on a single sheet of paper, you can save paper and printer ink by selecting this feature.

Revision History

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202-10360-01	1.0	March 2008	

Chapter 1
Getting Started with Switch Management

This section provides an overview of switch management, including the methods you can choose to start managing your NETGEAR GS700AT Gigabit Smart Switch. It also leads you through the steps necessary to get started, using the SmartWizard Discovery utility. The section includes this information under the following menu options:

- "System Requirements"
- "Switch Management Interface"
- "Network with a DHCP Server"
- "Network without a DHCP Server"
- "Web Access"
- "Additional Utilities"

System Requirements

The following hardware and software facilities are required to run the applications described in this manual:

- Network facilities:
  - Ethernet network with or without DHCP server as appropriate
  - Ethernet cable to connect the switch to a PC
- For running the SmartWizard Discovery utility and local or remote Web Management:
  - IBM-type PC with CD drive: RAM size and disk specification are not critical
  - OS software: Microsoft Windows Vista, Windows XP, or Windows 2000
  - Desktop computer running Microsoft Internet Explorer 5.0 or later or Netscape Navigator 6.0 or later, or equivalent

Note: For complete hardware installation instructions, refer to the *GS700AT Series Smart Switch Hardware Installation Manual* included on your *Resource CD*, or go to *http://www.netgear.com/support*.

Switch Management Interface

Your NETGEAR GS700AT Gigabit Smart Switch contains an embedded web server and management software for managing and monitoring switch functions. This switch operates as a simple switch without using the management software. The management software enables you to configure more advanced features, and consequently improve switch efficiency as well as overall network performance.

Web-Based Management enables you to monitor, configure, and control your switch remotely using a common web browser, instead of having to use expensive and complicated SNMP software products. Simply by using your web browser, you can monitor the performance of your switch and optimize network configuration. Using your browser, for example, you can set up VLANs, traffic priority, and configure port trunking.

In addition, NETGEAR provides the SmartWizard Discovery utility with this product. This program runs under Microsoft Windows XP or Windows 2000 and provides a “front end” that discovers the switches on your network segment. When you power up your switch for the first time, the SmartWizard Discovery utility enables you to configure its basic network parameters without prior knowledge of IP address or subnet mask. Following such configuration, this program leads you into the Web Management interface.

Some features of the SmartWizard Discovery utility and Web Management interface are shown in the table below.

Table 1-1. Switch Management Methods

Management Method	Features
SmartWizard Discovery utility	No IP address or subnet mask setup needed Discover all switches on the network User-friendly interface under Microsoft Windows Firmware upgrade capability Password change feature Provides entry to web configuration of switch
Web browser interface	Password protection Ideal for configuring the switch remotely Compatible with Internet Explorer and Netscape Navigator on any platform Extensive switch configuration possible Configuration backup and restore Can be accessed from any location via the switch's IP address Intuitive browser interface Most visually appealing

For a more detailed discussion of the SmartWizard Discovery utility, continue with this section: "Network with a DHCP Server" or "Network without a DHCP Server". For a detailed discussion of the Web Browser Interface, see Chapter 2, "Introduction to the Web Browser Interface".

Network with a DHCP Server

To install the switch in a network with a DHCP server, proceed as follows:

1. Connect the GS700AT Series Smart Switch to a DHCP network.
2. Power on the switch by connecting its AC-DC power adapter.
3. Install the SmartWizard Discovery utility, located on the switch installation CD, on your computer.
4. Start the SmartWizard Discovery utility.

5. Click **Discover** for the SmartWizard Discovery utility to find your GS700AT Gigabit Smart Switch. You should see a screen similar to that shown below.

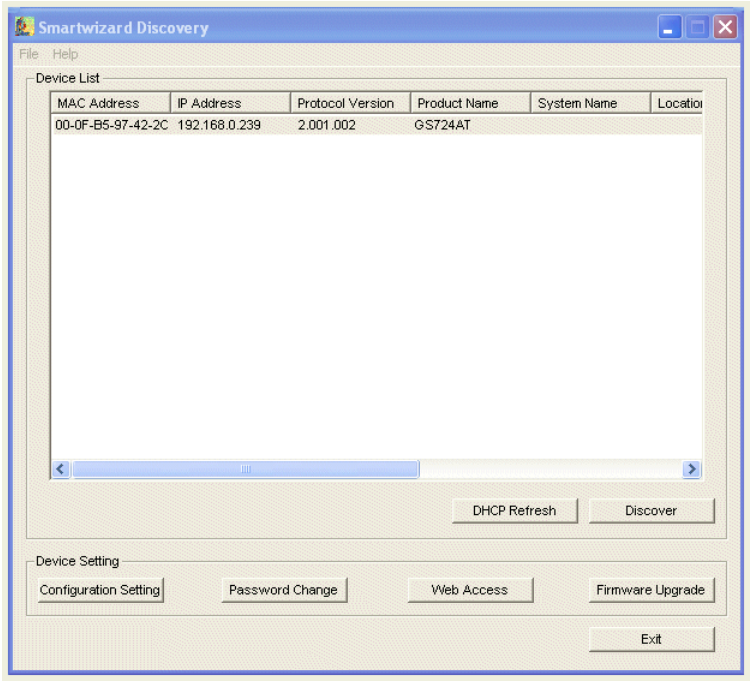


Figure 1-1

6. Note the displayed IP address assigned by the DHCP server. You will need this value to access the switch directly from a web browser (without using the SmartWizard Discovery utility).

7. Select your switch by highlighting the name of the switch. Then click **Web Access**. The discovery utility displays a login window similar to the following:

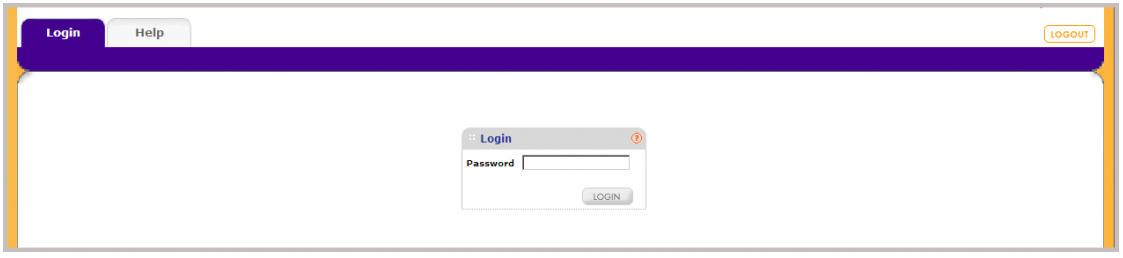


Figure 1-2

8. Use your web browser to manage your switch. The default password is **password**. Then use this screen to proceed to management of the switch covered in Chapter 2, “Introduction to the Web Browser Interface”.

Network without a DHCP Server

This section describes how to set up your switch in a network without a DHCP server, and is divided into the following tasks:

- Manually assign network parameters for your switch
- Configure the NIC settings on the host PC
- Log in to the web-based switch management utility

Manually Assigning Network Parameters

If your network has no DHCP service, you must assign a static IP address to your switch. You can also assign the switch a static IP address even if your network has DHCP service. Proceed as follows:

1. Connect the GS700AT Gigabit Smart Switch to your existing network.
2. Power on the switch by plugging in the AC-DC power adapter. The default IP is 192.168.0.239.
3. Install the SmartWizard Discovery utility on your computer. The SmartWizard Discovery utility is located on the switch installation CD.
4. Start the SmartWizard Discovery utility.
5. Click **Discover** for the SmartWizard Discovery utility to find your GS700AT Gigabit Smart Switch. You should see a screen similar to that shown in Figure 1-1.

6. Click **Configuration Setting**. A screen similar to that shown below appears.

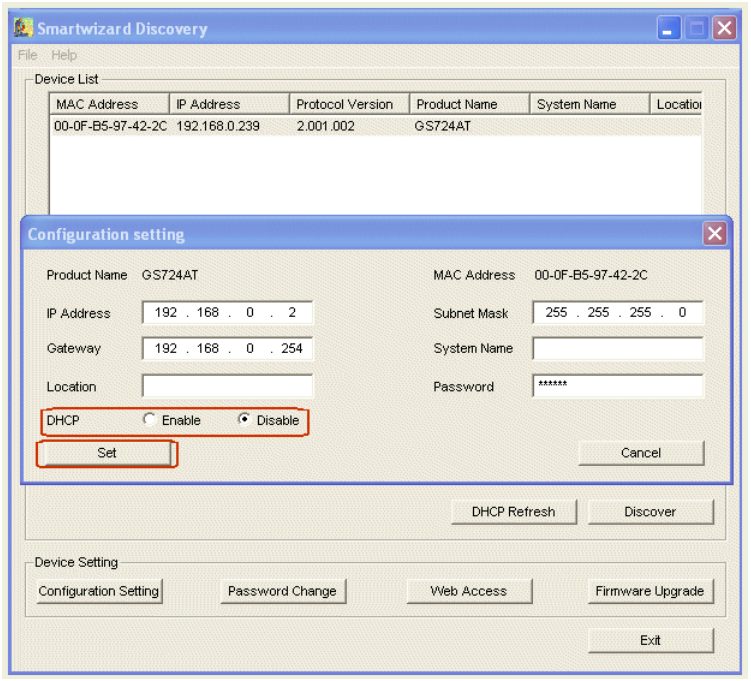


Figure 1-3

7. Select **Disable** to disable DHCP.
8. The default IP address is 192.168.0.239 and the default subnet mask is 255.255.255.0. If you want different values, enter the switch IP address, gateway IP address and subnet mask.
9. Type your password and click **Set**. Please ensure that your PC and the GS700AT Gigabit Smart Switch are in the same subnet. Note the settings for later use.

NIC Setting on the Host that Accesses the GS700AT Gigabit Smart Switch

The settings of your Network Interface Card (NIC) under MS Windows OS are made with entries into Windows screens similar to the ones shown below. For comparison, the settings screens of the switch are also shown although they do not appear in the Windows view.

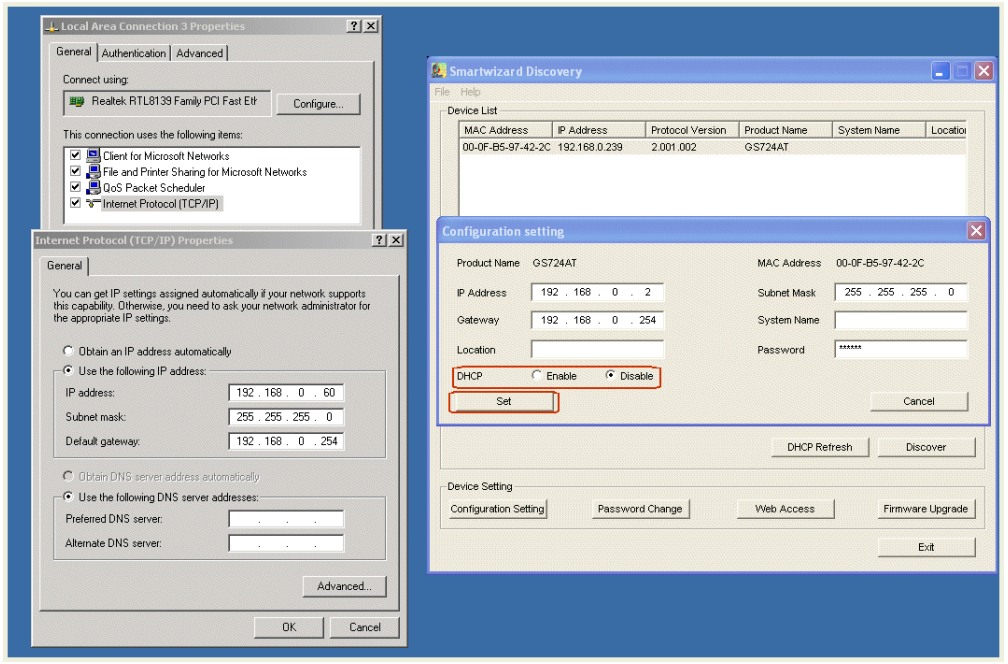


Figure 1-4

You need Windows Administrator privileges to change these settings.

1. On your PC, access the MS Windows operating system TCP/IP Properties.
2. Set IP address and subnet mask appropriately. The subnet mask value is identical to that set in the switch. The PC IP address must be different from that of the switch but lie in the same subnet.
3. Click **Web Access** in the SmartWizard Discovery utility to enable the management screens as described in the following section.

Web Access

For Web access, you can either:

- Select **Web Access** using the SmartWizard Discovery utility (see "Network with a DHCP Server" or "Network without a DHCP Server").
- Access the switch directly, without using the SmartWizard Discovery utility.

You must work from the same network segment that contains the switch (i.e., the subnet mask values of switch and PC host must be the same) and you must point your browser using the switch IP address. If you used the SmartWizard Discovery utility to set up IP address and subnet mask, either with or without DHCP server, use that IP address in your browser window.

If you are starting with an "out of the box" switch and are not using the SmartWizard Discovery utility, you must initially configure your host PC to be on a network segment to match the default parameters of the switch, which are:

- IP address: 192.168.0.239
- Subnet Mask: 255.255.255.0

You can change the network parameters to match those of your network (this procedure is described in Chapter 3, "Managing System Settings"). Your host PC network parameters must then be set to match your network.

Clicking **Web Access** on the SmartWizard Discovery utility or accessing the switch directly displays the screen shown below.

Figure 1-5

Use this screen to proceed to management of the switch covered in Chapter 2, "Introduction to the Web Browser Interface".

Additional Utilities

Alternatively, from the main screen shown on Figure 1-1 you can access these additional functions:

- "Password Change"
- "Firmware Upgrade"

Password Change

You can set a new password of up to 20 ASCII characters.

1. Click **Password Change** from the Switch Setting section. The Password Change screen appears. You can set a new password. You must enter the old and new passwords and confirm the new one.
2. Click **Set** to enable the new password.

Firmware Upgrade

The GS700AT Series Smart Switch software is upgradeable, and enables your switch to take advantage of improvements and additional features as they become available. The upgrade procedure assumes that you have downloaded or otherwise obtained the firmware upgrade and that you have it available as a binary file on your computer. This procedure uses the TFTP protocol to implement the transfer from computer to switch.

	Note: You can also upgrade the firmware using the Download menu of the switch (see "Download").

If you click **Firmware Upgrade** from the main screen (see Figure 1-1), after you have selected the switch to upgrade, the following screen appears:

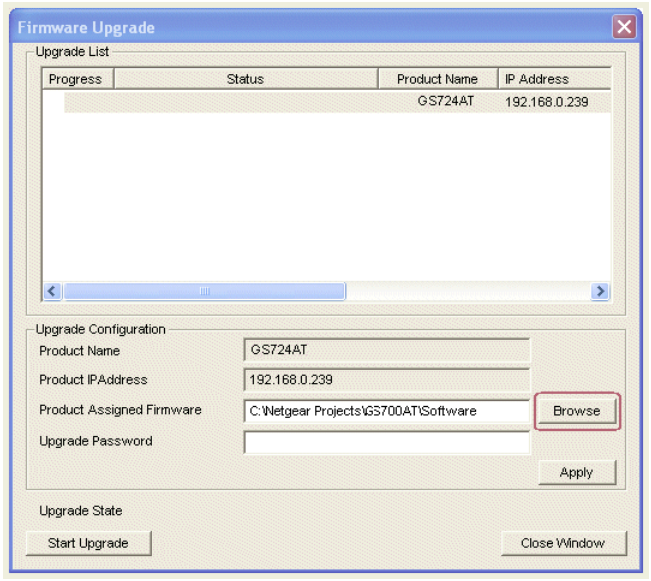


Figure 1-6

1. Enter the following values into the appropriate places in the form:
   - **Product Assigned Firmware**: The location of the new firmware. If you do not know the location, click **Browse** to locate the file.
   - **Upgrade Password**: Enter your password; the default password is **password**.
2. Click **Apply** to apply the settings to the Upgrade Configuration.
3. Click **Start Upgrade** to begin loading the upgrade. The system software is automatically loaded. The **Upgrade State** field shows upgrading in progress.When the process is complete, the switch automatically reboots.

Exit

Click **Exit** from the SmartWizard Discovery screen to close the SmartWizard Discovery utility.

Chapter 2
Introduction to the Web Browser Interface

This section introduces the web browser interface that enables you to configure and manage your NETGEAR GS700AT Gigabit Smart Switch. Your GS700AT Series Smart Switch provides a built-in browser interface that enables you to configure and manage it remotely using a standard Web browser such as Microsoft Internet Explorer or Netscape Navigator. Online Help is also provided for many of the basic functions and features of the switch.

This section introduces the areas of the browser interface and includes the following topics:

- "Logging Into the NETGEAR Home Screen"
- "Using the NETGEAR Web Management System Options"

Logging Into the NETGEAR Home Screen

Begin your overview of the GS700AT Series Smart Switch browser interface by logging in:

1. Start the application by one of the following methods, as described in Chapter 1, "Getting Started with Switch Management":

   a. In the SmartWizard Discovery utility click **Web Access**.

   or

   b. In the web browser enter the switch's IP address and press **Enter**.

   The Login screen appears.

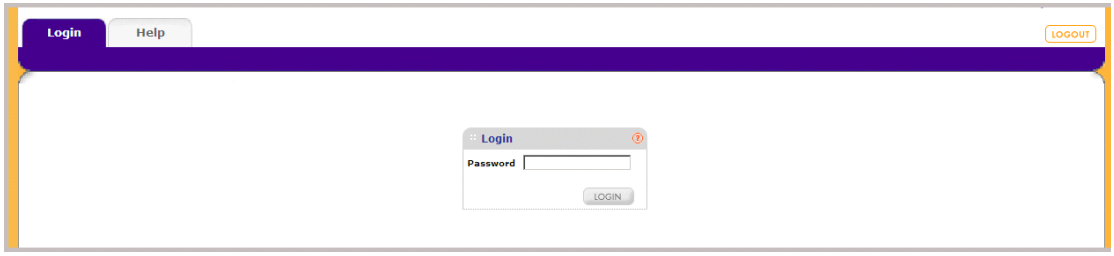


Figure 2-1

2. Enter the password (the factory default is **password**) and click **Login**. The home screen of the GS700AT Series Smart Switch browser interface displays.

The Navigation Menu

As shown below, logging in brings you to the view of the web browser interface.

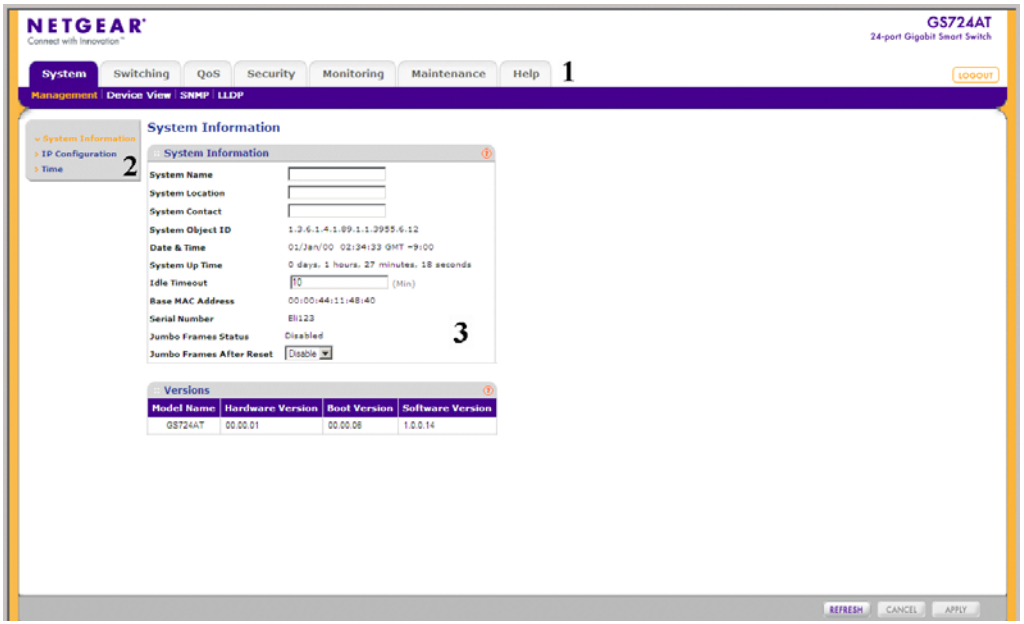


Figure 2-2

The NETGEAR GS700AT Series web browser interface contains the following views:

Main Navigation Area – Located on the top of the NETGEAR GS700AT Series web browser interface and marked as 1 in Figure 2-2. The Main Navigation Area includes Primary and Secondary Navigation Bars. The Primary Navigation Bar contains a list of the different features that can be configured including System, Switching, QoS, Security, Monitoring, Maintenance and Help. Each feature expands to a subset of features that can be configured as part of the Secondary Navigation Bar.

Left Navigation Tree – Located on the left side of the NETGEAR GS700AT Series web browser interface and marked as 2 in Figure 2-2. For each Secondary Navigation Feature the Left Navigation Tree contains a subset of features that can be expanded to display all the components.

Work Area – Located on the right side of the NETGEAR GS700AT Series web browser interface and marked as 3 in Figure 2-2. The Work Area contains device tables, general device information, and configurable device parameters.

For further description of the functions, refer to the appropriate section of this manual:

- Chapter 3, "Managing System Settings" describes how to configure the System functions.
- Chapter 4, "Configuring Switching Settings" describes how to configure the Switch functions.
- Chapter 5, "Configuring QoS" describes how to configure QoS functions.
- Chapter 6, "Managing Security" describes how to configure security.
- Chapter 7, "Monitoring the Switch" describes how to configure monitoring functions.
- Chapter 8, "Maintenance" describes maintenance functions, such as firmware upgrade.
- Chapter 9, "Online Help" describes how to obtain online help and support.

Using the NETGEAR Web Management System Options

The GS700AT Series web browser interface provides the following options:

- **Device Management Buttons –** Provides an explanation of the management buttons in the NETGEAR GS700AT Series Smart Switch.
- **Informational Services** – Provides access to informational services including technical support, online help and device information.
- **Using Screen and Table Options** – Provides an explanation of specific GUI characteristics and tables for configuring the device.

Device Management Buttons

The NETGEAR GS700AT Series Smart Switch web browser GUI management buttons allow network managers to easily configure the device from remote locations. The management buttons are shown below:

Table 2-1. Device Management Buttons

Button Name	Description
ADD	Adds information to tables or information windows.
APPLY	Applies configured changes to the device.
CANCEL	Cancels modifications to tables or information windows.

Table 2-1. Device Management Buttons (continued)

Button Name	Description
CLEAR ALL	Refreshes device information.
CLEAR ALL COUNTERS	Resets statistics counters.
CLEAR LOGS	Clears logs.
CURRENT MEMBERS	Displays current members of a LAG.
DELETE	Deletes information from tables or information windows.
GO	Selects the specified interface.
REFRESH	Refreshes the screen with current data.
TAGGED PORT MEMBERS	Displays tagged port members of a VLAN.
TEST	Tests copper cables.
UNTAGGED PORT MEMBERS	Displays untagged port members of a VLAN.

Informational Services

Informational services provide access to technical support, online help and device information and are displayed in the following topics:

- "Help Navigation Tab"
- "Accessing Device Information"

Help Navigation Tab

The Help Navigation Tab provides access to informational services including NETGEAR online support and an online user guide in PDF format. For a detailed description of how to access and use these functions, see Chapter 9, "Online Help".

Accessing Device Information

Each screen of the web browser interface contains a help file with configuration information relating to the selected screen.

To access the help file for a screen:

1. Click the encircled red Question Mark icon, shown in the example below.

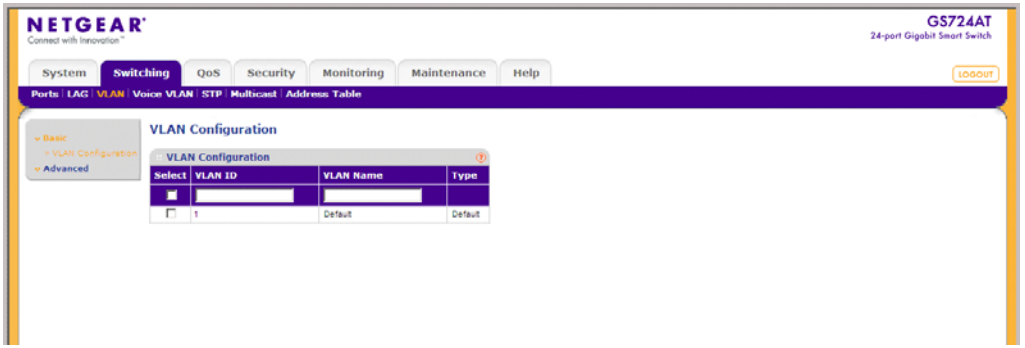


Figure 2-3

A help window for the screen opens.

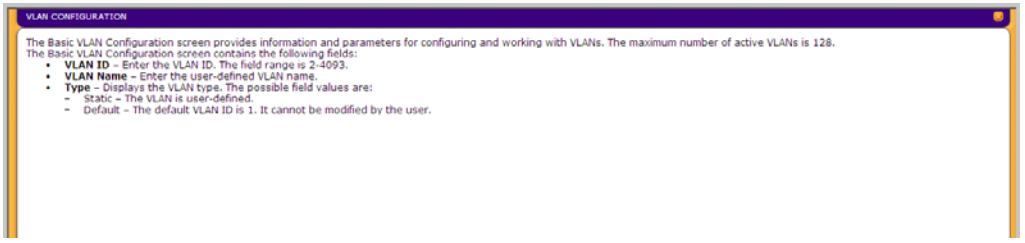


Figure 2-4

Using Screen and Table Options

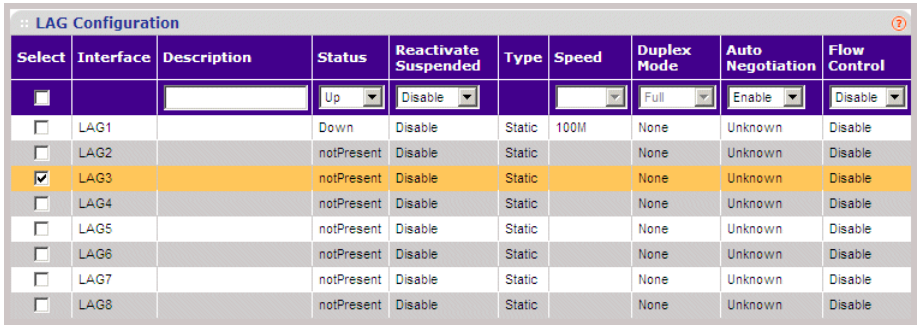
The NETGEAR GS700AT Series web browser interface contains screens and tables for configuring devices. This section describes the table options:

- "Selecting an Entry"
- "Adding an Entry"
- "Modifying an Entry"
- "Deleting an Entry"
- "Special Table Options"

Selecting an Entry

To select an entry:

1. Check the entry's **Select** box. The selected entry is highlighted and the information appears in the first row, which contains the editable fields.



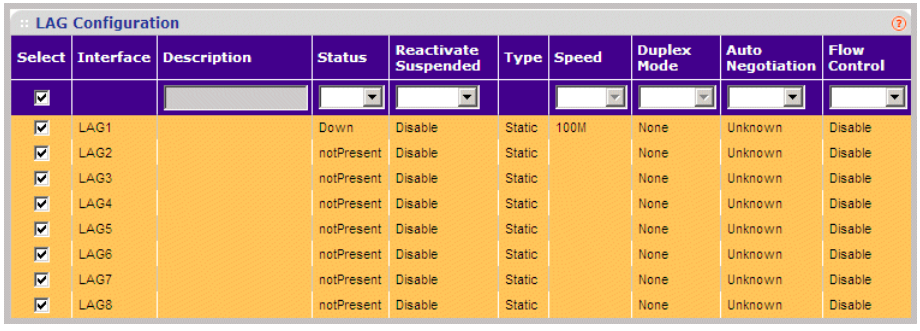
LAG Configuration

Select	Interface	Description	Status	Reactivate Suspended	Type	Speed	Duplex Mode	Auto Negotiation	Flow Control
☐			Up	Disable			Full	Enable	Disable
☐	LAG1		Down	Disable	Static	100M	None	Unknown	Disable
☐	LAG2		notPresent	Disable	Static		None	Unknown	Disable
☑	LAG3		notPresent	Disable	Static		None	Unknown	Disable
☐	LAG4		notPresent	Disable	Static		None	Unknown	Disable
☐	LAG5		notPresent	Disable	Static		None	Unknown	Disable
☐	LAG6		notPresent	Disable	Static		None	Unknown	Disable
☐	LAG7		notPresent	Disable	Static		None	Unknown	Disable
☐	LAG8		notPresent	Disable	Static		None	Unknown	Disable

Figure 2-5

To select all entries:

1. Check the **Select** box in the first row to select all entries in the table. Fields that are unique are grayed out and displayed as read-only fields.



LAG Configuration

Select	Interface	Description	Status	Reactivate Suspended	Type	Speed	Duplex Mode	Auto Negotiation	Flow Control
☑									
☑	LAG1		Down	Disable	Static	100M	None	Unknown	Disable
☑	LAG2		notPresent	Disable	Static		None	Unknown	Disable
☑	LAG3		notPresent	Disable	Static		None	Unknown	Disable
☑	LAG4		notPresent	Disable	Static		None	Unknown	Disable
☑	LAG5		notPresent	Disable	Static		None	Unknown	Disable
☑	LAG6		notPresent	Disable	Static		None	Unknown	Disable
☑	LAG7		notPresent	Disable	Static		None	Unknown	Disable
☑	LAG8		notPresent	Disable	Static		None	Unknown	Disable

Figure 2-6

Adding an Entry

An entry may be added to the table by creating a new entry or by duplicating an existing entry.

To add an entry by creating a new entry in the table:

1. Enter the fields for the new entry in the provided fields in the first row.

Figure 2-7

2. Click **ADD** to update the device. The new entry is displayed.

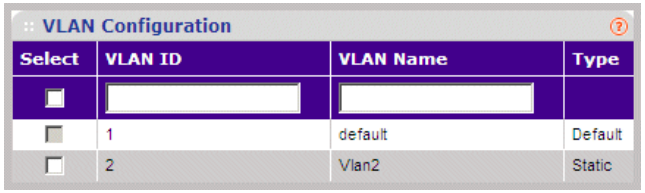


Figure 2-8

Modifying an Entry

An entry may be modified by editing its values in the first row.

To modify an entry:

1. Select the entry to be modified. Its contents are displayed in the first row.

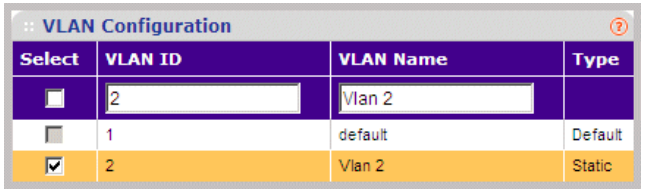


Figure 2-9

2. Modify the fields in the first row.
3. Click **APPLY** to update the device.

Deleting an Entry

To delete entries from a table:

1. Select the entries to be deleted.
2. Click **DELETE** to update the device.

Special Table Options

The NETGEAR web browser interface tables have a unique GUI design which includes the following options:

- Gold Buttons
- Quick Boxes
- Interface View and Selection

Gold Buttons. Gold Buttons provide flexibility in viewing and configuring VLANs/LAGs on a port level. The following example displays gold button basic usage options.

To view the LAG configuration of the ports:

1. Click anywhere on the ports gold button. The ports panel is displayed:

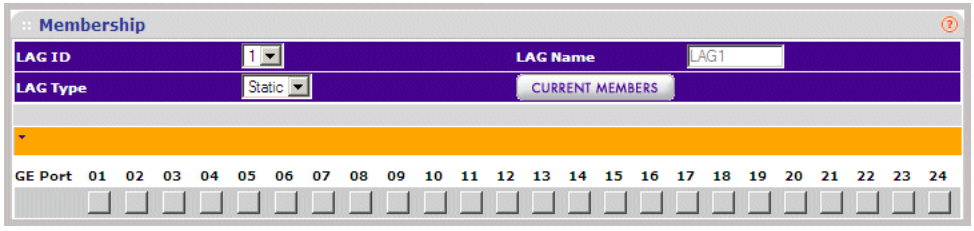


Figure 2-10

2. Select the ports to be added as LAG members within the selected LAG by clicking on their respective boxes.
3. Click **Apply** to update the device.

Quick Boxes. Quick Boxes provide users with flexibility in configuring VLANs for all ports or LAGs. Clicking on the quick box toggles between the various options that exist for this field. A quick box appears to the right of the arrow on the left-hand side of the gold button. The following example displays quick box basic usage options.

To mark or unmark all ports:

1. Click on the quick box that appears to the left of the **Port** gold button. A **T** appears in the quick box. This sets all ports as Tagged.

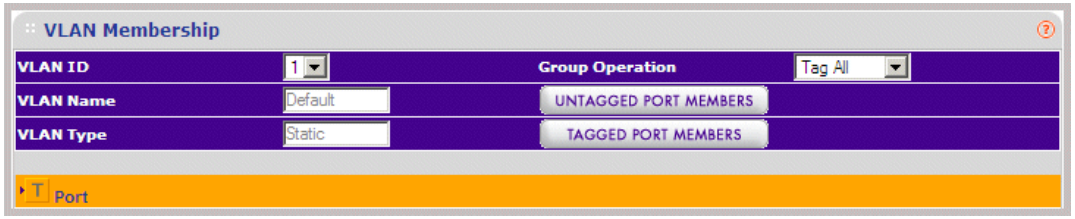


Figure 2-11

2. Click on the **Port** gold button to display the ports, which are now all Tagged.

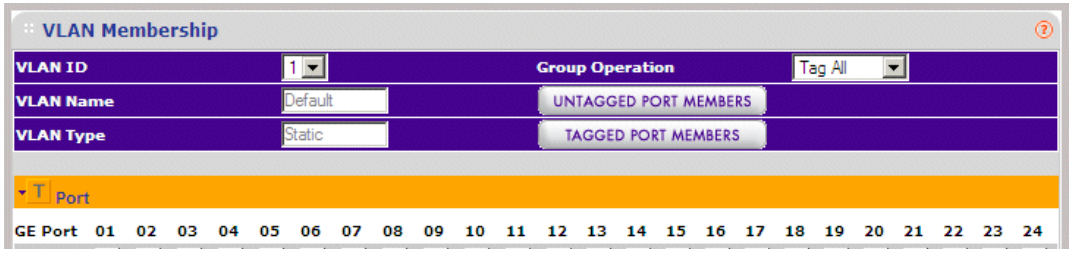


Figure 2-12

3. Click again on the **Port** quick box, and a **U** appears in the quick box and in all the port boxes, marking the ports as untagged.

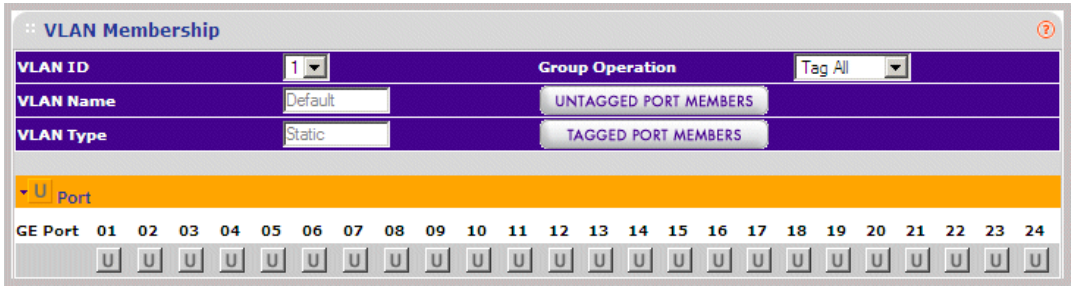


Figure 2-13

4. Click again on the quick box, and the quick box and all the port boxes appear blank, marking the ports as neither tagged nor untagged.

5. You may click on individual port boxes to toggle their tagged/untagged status

Interface View and Selection. A port or LAG interface may be selected from a table by using the interface selection row, located above the row of column headers. Clicking on PORTS or LAGS displays the ports or the LAGs:

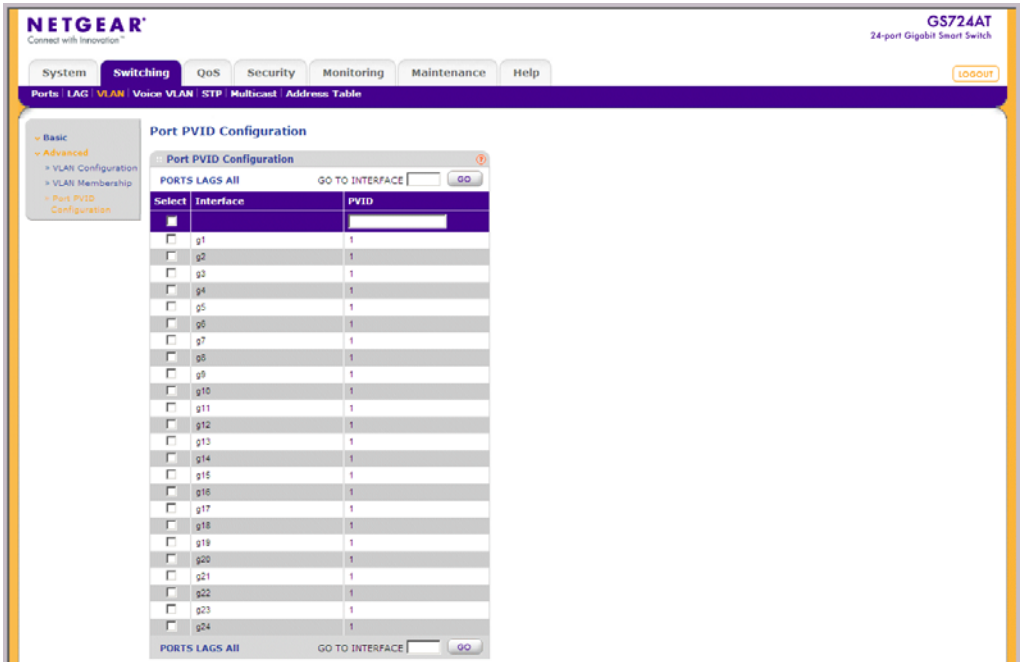


Figure 2-14

To display all ports:

1. Click **PORTS** in the interface selection row. The screen displays a table of all ports.

To display all interfaces:

2. Click **All** in the interface selection row. A confirmation window opens.

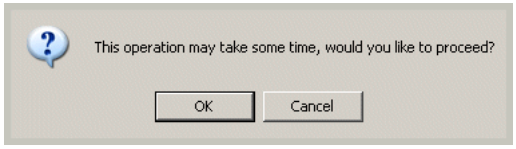


Figure 2-15

3. Click **OK**. The screen displays a table of all interfaces.

To display the LAG table:

1. Click **LAGS** in the interface selection row. The screen displays a table of all LAGs.

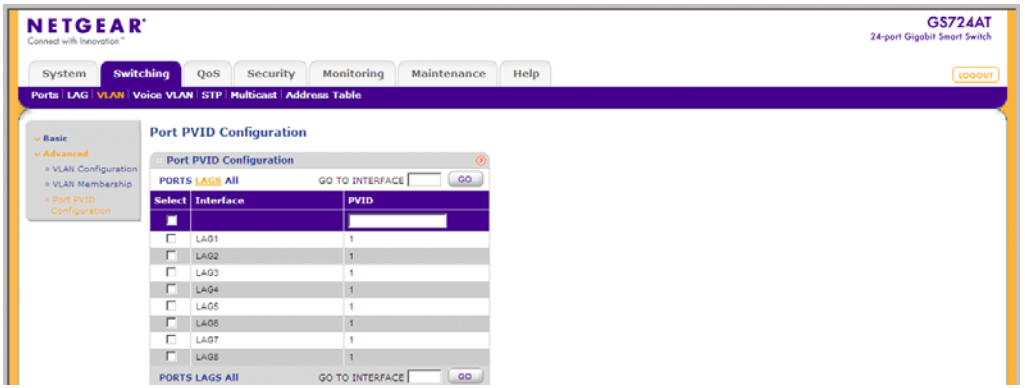


Figure 2-16

To select an interface:

1. Enter the number of the interface in the **GO TO INTERFACE** box.
2. Click **GO** to select the interface, as in the following example.

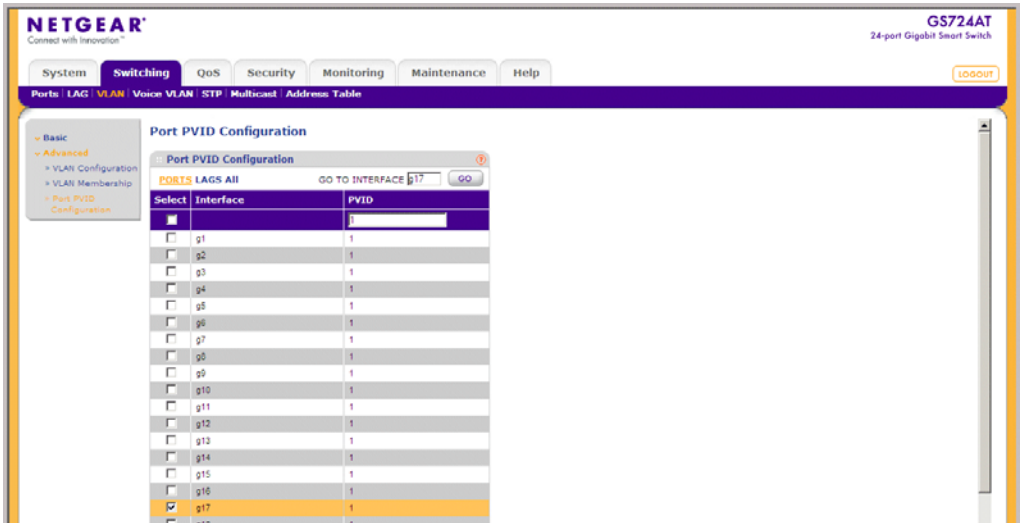


Figure 2-17

Chapter 3
Managing System Settings

Using the System Settings Utility

The navigation pane at the top of the web browser interface contains a System tab that enables you to manage your GS700AT Series Smart Switch with features under the following main menu options:

- "Management"
- "Device View"
- "SNMP"
- "LLDP"

The description that follows in this chapter describes configuring and managing system settings in the GS700AT Series Smart Switch.

Management

The **Management** menu enables configuration of some system parameters, the switch IP Address and the system time, and contains the following options:

- "System Information"
- "IP Configuration"
- "Time"

System Information

The System Information screen contains parameters for configuring general device information including the system name, system location, system contact, idle timeout.

To configure system parameters:

1. Click **System > Management > System Information**. The System Information screen displays:

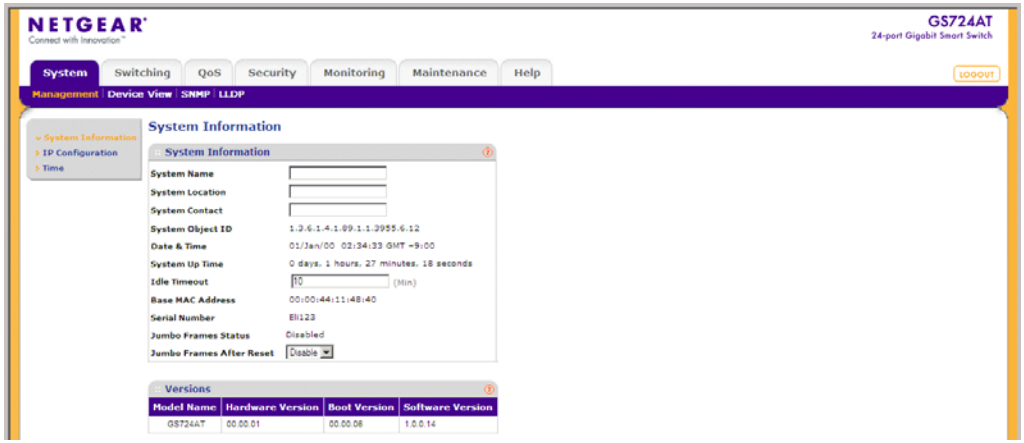


Figure 3-1

The System Information screen contains the following fields:

- **System Name** – Enter the user-defined device name. The field may contain 0-160 characters.
- **System Location** – Enter the location where the system is currently running. The field may contain 0-160 characters.
- **System Contact** – Enter the name of the contact person. The field may contain 0-160 characters.
- **System Object ID** – Displays the vendor's authoritative identification.
- **Date & Time** – Displays the current date and local time.
- **System Up Time** – Displays the amount of time since the most recent device reset. The system time is displayed in the following format: days, hours, minutes, seconds. For example, 41 days, 2 hours, 22 minutes, 15 seconds.
- **Idle Timeout** – Enter the amount of time (minutes) that elapses before an idle station is timed out. Idle stations that are timed out must login to the system. The field range is 5 - 30 minutes. The field default value is 10 minutes.
- **Base MAC Address** – Displays the MAC address of .
- **Serial Number** – Displays the device serial number.

- **Jumbo Frames Status** – Displays the Jumbo Frame status.
- **Jumbo Frames After Reset** – Select the Jumbo Frame status. The possible field values are:
  - Enable – Enable Jumbo Frames.
  - Disable – Disable Jumbo Frames.

The Versions Table displays the following fields:

- **Model Name** – Displays the device model name.
- **Hardware Version** – Displays the installed device hardware version number.
- **Boot Version** – Displays the current boot version running on the device.
- **Software Version** – Displays the installed software version number.

2. Enter the **System Name**, **System Location**, **System Contact** and **Idle Timeout** in the provided fields.
3. Select whether to enable or disable **Jumbo Frames After Reset**.
4. Click **Apply** to update the system settings.

IP Configuration

The IP Configuration screen contains fields for assigning IP addresses. IP addresses are either defined as static or are retrieved using the Dynamic Host Configuration Protocol (DHCP). The IP Interface screen also contains information for defining default gateways. DHCP is also configured from the IP Interface screen. The DHCP assigns dynamic IP addresses to devices on a network. DHCP ensures that network devices can have a different IP address every time the device connects to the network.

Note the following when configuring IP Addresses:

- If the device is accessed using SmartWizard Discovery, the IP address retrieved through DHCP is displayed.
- If the device fails to retrieve an IP address through DHCP, the default IP address is 192.168.0.239.

To define an IP interface:

1. Click **System > Management > IP Configuration**. The IP Configuration screen displays:

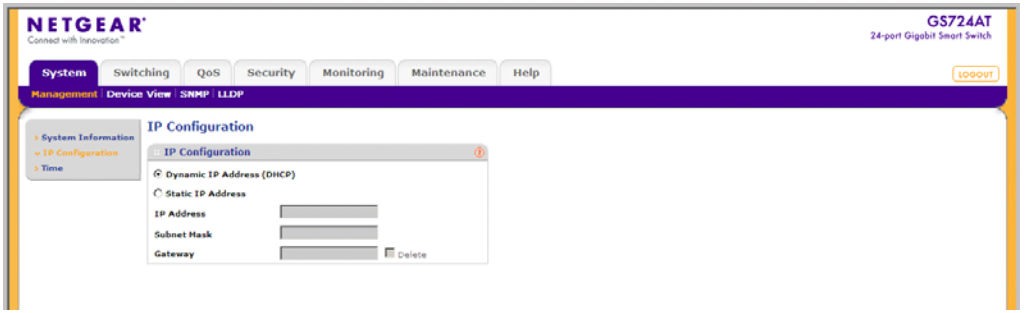


Figure 3-2

The IP Configuration screen contains the following fields:

- **Dynamic IP Address (DHCP)** – Enable the IP address to be configured automatically by the DHCP server. Selecting this field disables the **IP Address**, **Subnet Mask, Gateway** and **Delete** fields.
- **Static IP Address** – Enable the user to define a static IP address.
- **IP Address** – Enter the static IP address used to manage the device.
- **Subnet Mask** – Enter the IP address mask.
- **Gateway** – Enter the default gateway IP address. The following option is available:
  - **Delete** – Delete the default gateway IP address.

2. Select the method of assigning the IP address by selecting either **Dynamic IP Address** or **Static IP Address**.
3. If you selected **Static IP Address**, enter the **IP Address**, **Subnet Mask** and **Gateway** address in the provided fields.
4. Click **Apply** to update the system settings.

Time

The **Time** menu enables local system time or SNTP server configuration, and contains the following options:

- "Time Configuration"
- "SNTP Server Configuration"

Time Configuration

The Time Configuration screen contains information for defining both the local hardware clock and the external SNTP clock. If the system time is managed via an external SNTP clock, and the external SNTP clock fails, the system time reverts to the local hardware clock.

To configure the local system time:

1. Click **System > Management > Time > Time Configuration**. The Time Configuration screen displays:

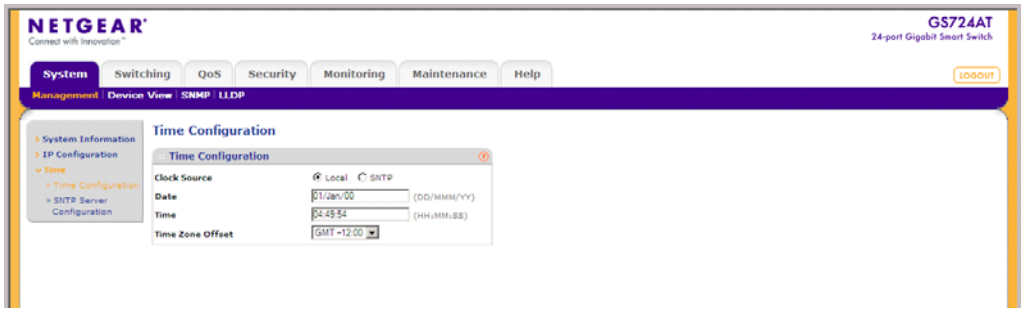


Figure 3-3

The Time Configuration screen contains the following fields:

- **Clock Source** – Select the source used to set the system clock. The possible field values are:
  - Local – The system time is set locally via the **Date** and **Time** fields.
  - SNTP – The system time is set via an SNTP server. Select SNTP to disable the **Date** and **Time** fields.
- **Date** – Enter the local system date. The field format is DD/MMM/YY (Day/Month/Year). For example: 04/May/50 (May 4, 2050).
- **Time** – Enter the local system time. The field format is HH:MM:SS. For example: 21:15:03.
- **Time Zone Offset** – Select the difference between Greenwich Mean Time (GMT) and local time. For example, the Time Zone Offset for Paris is GMT +1, while the Time Zone Offset for New York is GMT –5.

2. Select the **Clock Source** by selecting either **Local** or **SNTP**.
3. If you selected **Local**, then enter the local **Date** and **Time** in the provided fields.
4. Select the **Time Zone Offset** from the list.

5. Click **Apply** to update the system settings.

> **Note:** If you selected **SNTP**, you must configure the SNTP servers. See "SNTP Server Configuration" for detailed instructions on configuring the SNTP servers.

SNTP Server Configuration

The SNTP Server Configuration screen allows network administrators to define primary and secondary SNTP servers. The system time is first retrieved through the primary SNTP server. If the device is unable to retrieve the system time through the primary server, the device retrieves the system time from the secondary server.

To configure SNTP servers:

1. Click **System > Management > Time > SNTP Server Configuration**. The SNTP Server Configuration screen displays:

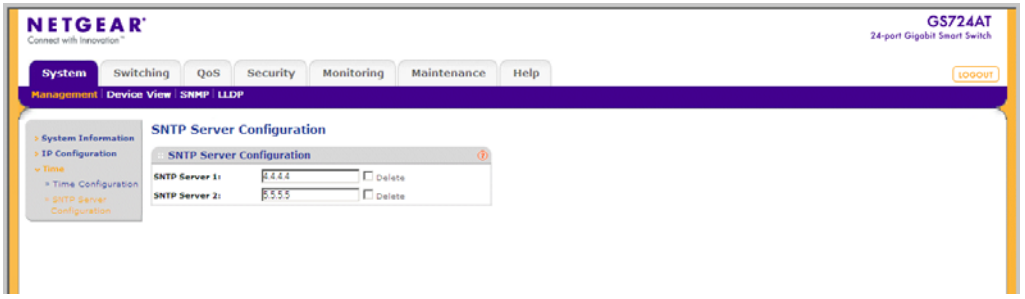


Figure 3-4

The SNTP Server Configuration screen contains the following fields:

- **SNTP Server 1** – Enter the primary SNTP server IP address. The Primary SNTP server is the first server used to retrieve the system time. The following option is available:
  - Delete – Remove the currently configured SNTP Server 1.
- **SNTP Server 2** – Enter the secondary SNTP server IP address. The Secondary SNTP server retrieves the system time if the Primary SNTP server times out. The following option is available:
  - Delete – Remove the currently configured SNTP Server 2.

2. Enter the **SNTP Server 1** and **SNTP Server 2** in the provided fields.
3. Click **Apply** to update the system settings.

To remove SNTP servers:

1. Check the **Delete** box for each SNTP server that is to be removed.
2. Click **Apply** to update the system settings.

Device View

The Device View menu option displays the Device View screen, which provides a graphic representation of the device, including the port and LED statuses.

To display the Device View screen:

1. Click **System > Device View**. The Device View screen displays:

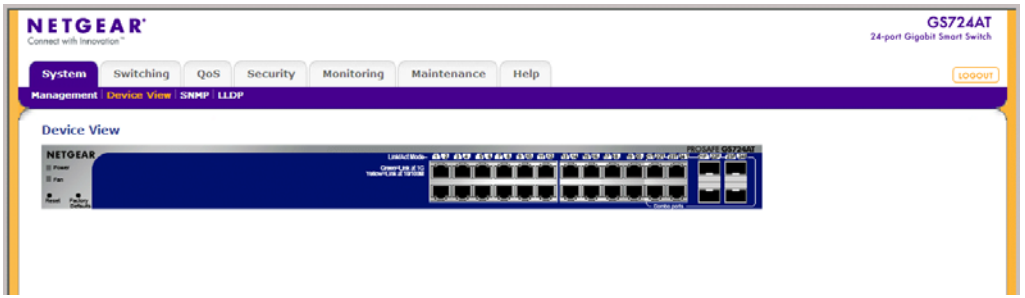


Figure 3-5

SNMP

Simple Network Management Protocol (SNMP) provides a method for managing network devices. The device supports the following SNMP versions:

- SNMP v1 and v2c
- SNMP version 3

The SNMP agents maintain a list of variables that are used to manage the device. The variables are defined in the Management Information Base (MIB). The SNMP agent defines the MIB specification format, as well as the format used to access the information over the network. Access strings control access rights to the SNMP agents. SNMP v3 applies access control and a new traps mechanism. In addition, User Security Model (USM) parameters are defined for SNMPv3, including:

- **Authentication** – Provides data integrity and data origin authentication.
- **Privacy** – Protects against the disclosure of message content. Cipher Block-Chaining (CBC) is used for encryption. Either authentication is enabled on an SNMP message, or both authentication and privacy. However, privacy cannot be enabled without authentication.
- **Timeliness** – Protects against message delay or message redundancy. The SNMP agent compares the incoming message to the message time information. Enter the amount of time the device waits before re-sending informs.
- **Key Management** – Enter key generation, key updates, and key usage.

The device supports SNMP notification filters based on Object IDs (OIDs). OIDs are used by the system to manage device features. SNMP v3 supports the following features:

- Security
- Feature Access Control
- Traps. The device generates copy traps.

The SNMP menu contains the following options:

- "SNMPv1/v2"
- "SNMPv3"

SNMPv1/v2

The **SNMPv1/v2** menu contains the following options:

- "Community Configuration"
- "Trap Configuration"

Community Configuration

Access rights are managed by defining communities in the Community Configuration screen. When community names are changed, access rights are also modified.

To configure SNMP communities:

1. Click **System > SNMP > SNMPv1/v2** > **Community Configuration**. The Community Configuration screen displays:

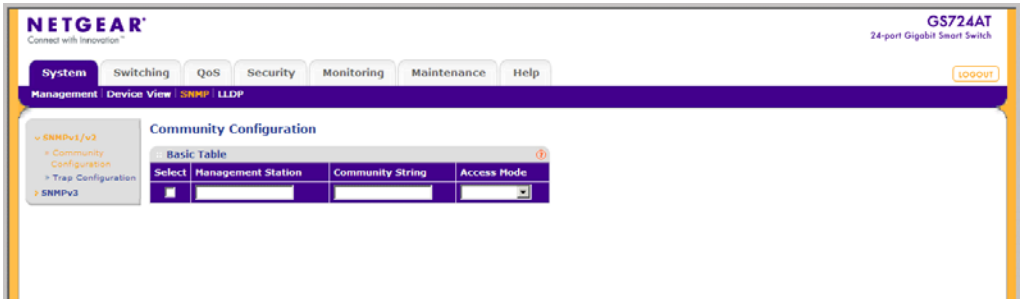


Figure 3-6

The SNMPv1/v2 Community Configuration screen contains the following fields:

- **Management Station** – Enter the management station IP address for which the Basic SNMP community is defined.
- **Community String** – Enter the SNMP community string used to authenticate the management station to the device.
- **Access Mode** – Select the access rights of the community. The possible field values are:
  - Read Only – Management access is restricted to read-only. Changes cannot be made to the device configuration and to the community.
  - Read Write – Management access is read-write. Changes can be made to the device configuration but not to the community.
  - SNMP Admin – User has access to all device configuration options, as well as permissions to modify the community.

2. Select the community entry.
3. Enter the **Management Station** and **Community String** in the provided fields in the first row.
4. Select the **Access Mode** from the list in the provided field in the first row.
5. Click **Apply** to update the device.

To add a new SNMP community:

1. Click **System > SNMP > SNMPv1/v2** > **Community Configuration**. The Community Configuration screen displays.

2. Enter the **Management Station** and **Community String** in the provided fields in the first row.
3. Select the **Access Mode** from the list in the provided field in the first row.
4. Click **Add** to update the device.

To remove an SNMP community:

1. Click **System > SNMP > SNMPv1/v2** > **Community Configuration**. The Community Configuration screen displays.
2. Select the entry to be removed.
3. Click **Delete** to remove the entry.

Trap Configuration

The SNMPv1/v2 Trap Configuration screen contains information for defining filters that determine whether traps are sent to specific users, and the trap type sent. SNMP notification filters provide the following services:

- Identifying Management Trap Targets
- Defining Trap Filtering
- Defining Trap Generation Parameters
- Providing Access Control Checks

To configure SNMPv1/v2 trap station management:

1. Click **System > SNMP > SNMPv1/v2** > **Trap Configuration**. The SNMPv1/v2 Trap Configuration screen displays:

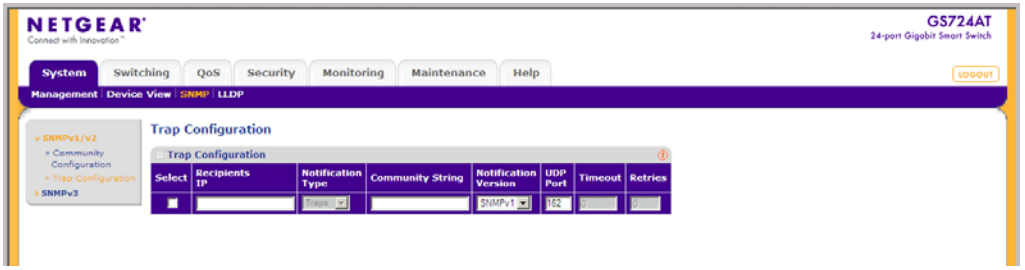


Figure 3-7

The SNMPv1/v2 Trap Configuration screen contains the following fields:

- **Recipients IP** – Enter the IP address to which the traps are sent.

- **Notification Type** – (Configurable only if the Notification Version is SNMPv2.) Select the type of notification sent. The possible field values are:
  - Traps – Traps are sent.
  - Informs – Informs are sent only when SNMPv2 is enabled.
- **Community String** – Enter the community string of the trap manager.
- **Notification Version** – Select the trap type. The possible field values are:
  - SNMPv1 – SNMP Version 1 traps are sent.
  - SNMPv2 – SNMP Version 2c traps are sent.
- **UDP Port** – Enter the UDP port used to send notifications. The default UDP port is 162.
- **Timeout** – Enter the amount of time (in seconds) the device waits before re-sending informs. The default is 15 seconds.
- **Retries** – Enter the amount of times the device re-sends an inform request. The default is 3 seconds.

2. Select the trap entry.
3. Enter the fields in the first row.
4. Click **Apply** to update the device.

To add a new SNMP trap:

1. Click **System > SNMP > SNMPv1/v2** > **Trap Configuration**. The SNMPv1/v2 Trap Configuration screen displays.
2. Enter the fields in the first row.
3. Click **Add** to update the device.

To remove an SNMP trap:

1. Click **System > SNMP > SNMPv1/v2** > **Trap Configuration**. The SNMPv1/v2 Trap Configuration screen displays.
2. Select the entry to be removed.
3. Click **Delete** to remove the entry.

SNMPv3

The **SNMPv3** menu contains the following options:

- "Engine ID"

- "View Name"
- "View Content"
- "Community Configuration"
- "Group Configuration"
- "User Configuration"
- "Global Trap Configuration"
- "Trap Configuration"
- "Trap Filter Name"
- "Trap Filter Content"

Engine ID

The SNMPv3 Engine ID screen allows network managers to define the SNMP Engine ID and to assign the default parameters to SNMP.

To define the Local Engine ID:

1. Click **System** > **SNMP > SNMPv3 > Engine ID**. The SNMPv3 Engine ID screen displays:

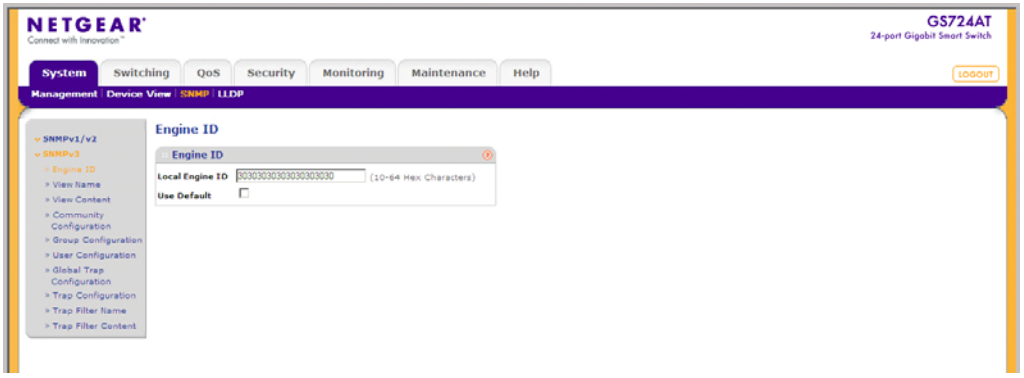


Figure 3-8

The SNMPv3 Engine ID screen contains the following fields:

- **Local Engine ID (10-64 Characters)** – Enter the local device Engine ID. The field value is a hexadecimal string. Each byte in hexadecimal character strings is two hexadecimal digits. Each byte digit can be separated by a period or a colon. The Engine ID must be defined before SNMPv3 is enabled.

- **Use Default** – Check the box to use the device-generated Engine ID. The default Engine ID is based on the device MAC address and is defined per standard as:
  - First 4 octets – First bit = 1, the rest is the IANA Enterprise number.
  - Fifth octet – Set to 3 to indicate the MAC address that follows.
  - Last 6 octets – MAC address of the device.

2. Specify the **Local Engine ID** field or check **Use Default** to use the device-generated Engine ID (Checking **Use Default** will override any entry in the **Local Engine ID** field).
3. Click **Apply** to update the device.

View Name

The SNMPv3 View Name screen allows the network managers to define SNMPv3 View Names. SNMPv3 views provide or block access to device features or portions of features.

To define SNMPv3 view names:

1. Click **System** > **SNMP > SNMPv3 > View Name**. The SNMPv3 View Name screen displays:

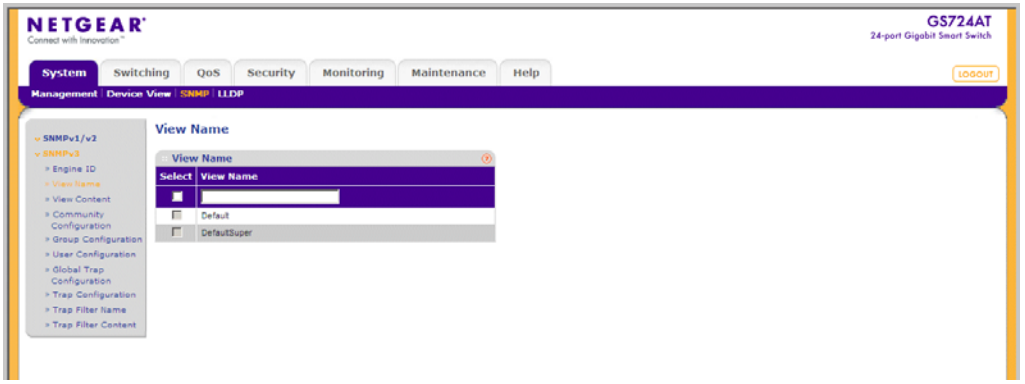


Figure 3-9

The SNMPv3 View Name screen contains the following field:

- **View Name** – Enter the user-defined view name. The view name can contain a maximum of 30 alphanumeric characters.

2. Select the entry.
3. Enter the **View Name** field in the first row.
4. Click **Apply** to update the device.

To add a new SNMP View Name:

1. Click **System** > **SNMP > SNMPv3 > View Name**. The SNMPv3 View Name screen displays.
2. Enter the **View Name** field in the first row.
3. Click **Add** to update the device.

To remove an SNMP View Name:

1. Click **System** > **SNMP > SNMPv3 > View Name**. The SNMPv3 View Name screen displays.
2. Select the entry to be removed.
3. Click **Delete** to remove the entry.

View Content

SNMP views provide or block access to device features or portions of features. For example, a view can be defined to provide a view that SNMP group A has Read Only (R/O) access to Multicast groups, while SNMP group B has Read-Write (R/W) access to Multicast groups. Feature access is granted via the MIB name or MIB Object ID.

To define the SNMP View Content:

1. Click **System** > **SNMP > SNMPv3 > View Content**. The SNMPv3 View Content screen displays:

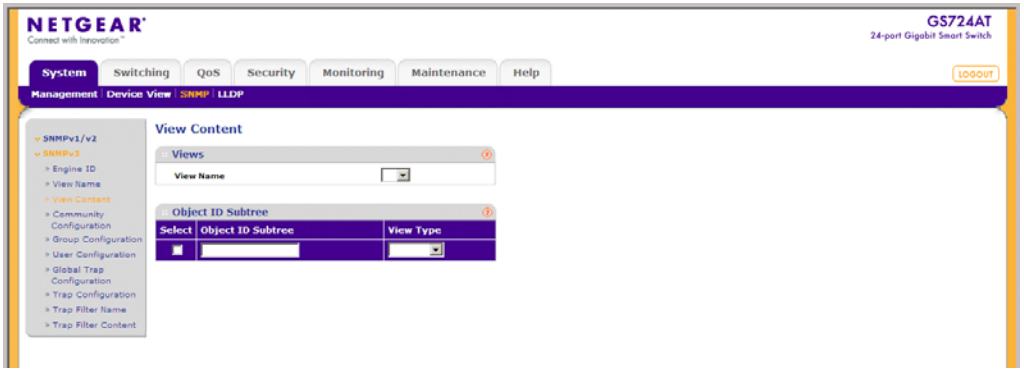


Figure 3-10

The SNMPv3 View Content screen contains the following fields:

Views

- **View Name** – Select the user-defined view name. The view name can contain a maximum of 30 alphanumeric characters.

- **Object ID Subtree** – Enter the device feature OID.
- **View Type** – Select whether the defined OID branch will be included in or excluded from the selected SNMP view. The possible field values are:
  - Included – The OID is included in the SNMP view.
  - Excluded – The OID is excluded from the SNMP view.

2. Select the **View Name** from the list in the provided field in the Views table.
3. Enter the **Object ID Subtree** in the provided field in the first row.
4. Select either Included or Excluded from the **View Type** provided field in the first row.
5. Click **Apply** to update the device.

To add a new SNMP OID entry:

1. Click **System** > **SNMP > SNMPv3 > View Content**. The SNMPv3 View Content screen displays.
2. Select the **View Name** from the list in the provided field in the Views table.
3. Enter the **Object ID Subtree** in the provided field in the first row.
4. Select either Included or Excluded from the **View Type** provided field in the first row.
5. Click **Add** to update the device.

To remove an SNMP OID entry:

1. Click **System** > **SNMP > SNMPv3 > View Content**. The SNMPv3 View Content screen displays.
2. Select the **View Name** from the list in the provided field in the Views table.
3. Select the OID entry to be removed.
4. Click **Delete** to remove the entry.

Community Configuration

Access rights are managed by defining communities in the Community Configuration screen. When community names are changed, access rights are also changed.

To define SNMPv3 communities:

1. Click **System > SNMP > SNMPv3** > **Community Configuration**. The SNMPv3 Community Configuration screen displays:

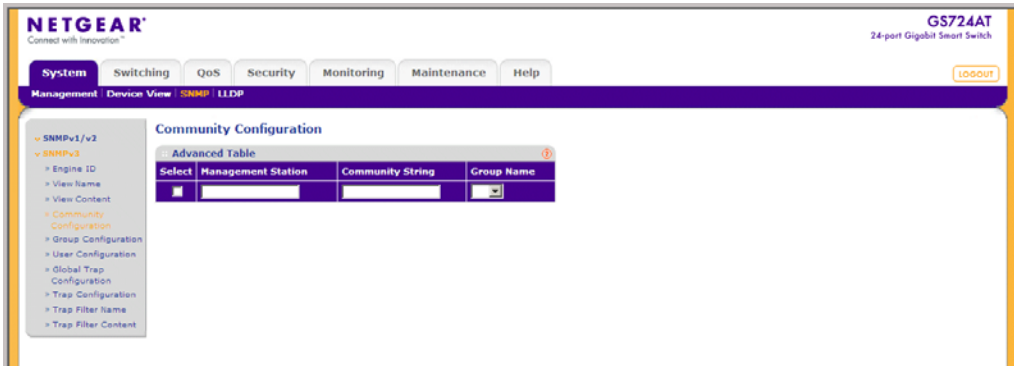


Figure 3-11

The SNMPv3 Community Configuration screen contains the following fields:

- **Management Station** – Enter the management station IP address for which the SNMP community is defined.
- **Community String** – Enter the password used to authenticate the management station to the device.
- **Group Name** – Select the SNMP group from a list of SNMP groups defined in the SNMP Group Configuration screen.

2. Select the SNMP community entry.
3. Enter the **Management Station** and **Community String** in the provided fields.
4. Select the **Group Name** from the list.
5. Click **Apply** to update the device.

To add a new SNMPv3 community:

1. Click **System > SNMP > SNMPv3** > **Community Configuration**. The SNMPv3 Community Configuration screen displays.
2. Enter the **Management Station** and **Community String** in the provided fields in the first row.
3. Select the **Group Name** from the list in the provided field in the first row.
4. Click **Add** to update the device.

To remove an SNMPv3 community:

1. Click **System > SNMP > SNMPv3** > **Community Configuration**. The SNMPv3 Community Configuration screen displays.
2. Select the community entry.
3. Click **Delete** to remove the entry.

Group Configuration

The SNMPv3 Groups screen provides information for creating SNMP groups and assigning SNMP access control privileges to SNMP groups. Groups allow network managers to assign access rights to specific device features or feature aspects.

To define an SNMP group:

1. Click **System > SNMP > SNMPv3** > **Group Configuration**. The SNMPv3 Groups screen displays:

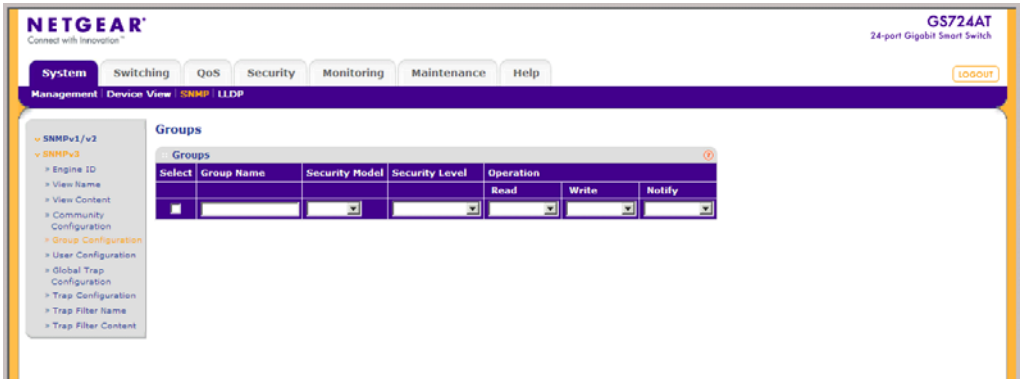


Figure 3-12

The SNMPv3 Groups screen contains the following fields:

- **Group Name** – Enter the user-defined group to which access control rules are applied. The field range is up to 30 characters.
- **Security Model** – Select the SNMP version associated with the group. The possible field values are:
  - SNMPv1 – SNMPv1 is defined for the group.
  - SNMPv2 – SNMPv2c is defined for the group.
  - SNMPv3 – SNMPv3 is defined for the group.

- **Security Level** – Select the security level attached to the group. Security levels apply to SNMPv3 only. The possible field values are:
  - No Authentication – Neither the Authentication nor the Privacy security levels are assigned to the group.
  - Authentication – Authenticates SNMP messages and ensures that the SNMP message's origin is authenticated.
  - Privacy – Encrypts SNMP messages.
- **Operation** – Select the group access rights. The possible field values are:
  - Read – Management access is restricted to read-only. Changes are made to the assigned SNMP view.
  - Write – Management access is read-write. Changes are made to the assigned SNMP view.
  - Notify – Sends traps for the assigned SNMP view.

2. Select the SNMP group entry.
3. Select the **Security Model** and **Security Level** from the lists in the provided fields in the first row.
4. Specify the group access rights for the selected SNMP views in the **Operation** provided fields in the first row.
5. Click **Apply** to update the device.

To add a new SNMPv3 group:

1. Click **System > SNMP > SNMPv3** > **Group Configuration**. The SNMPv3 Groups screen displays.
2. Select the **Security Model** and **Security Level** from the lists in the provided fields in the first row.
3. Specify the group access rights for the selected SNMP views in the **Operation** provided fields in the first row.
4. Click **Add** to update the device.

To remove an SNMPv3 group:

1. Click **System > SNMP > SNMPv3** > **Group Configuration**. The SNMPv3 Groups screen displays.
2. Select the group entry.

3. Click **Delete** to remove the entry.

User Configuration

The SNMPv3 User Configuration screen provides information for creating SNMP groups and assigning SNMP access control privileges to SNMP groups. Groups allow network managers to assign access rights to specific device features or feature aspects.

To define SNMP users:

1. Click **System > SNMP > SNMPv3** > **User Configuration**. The SNMPv3 User Configuration screen displays:

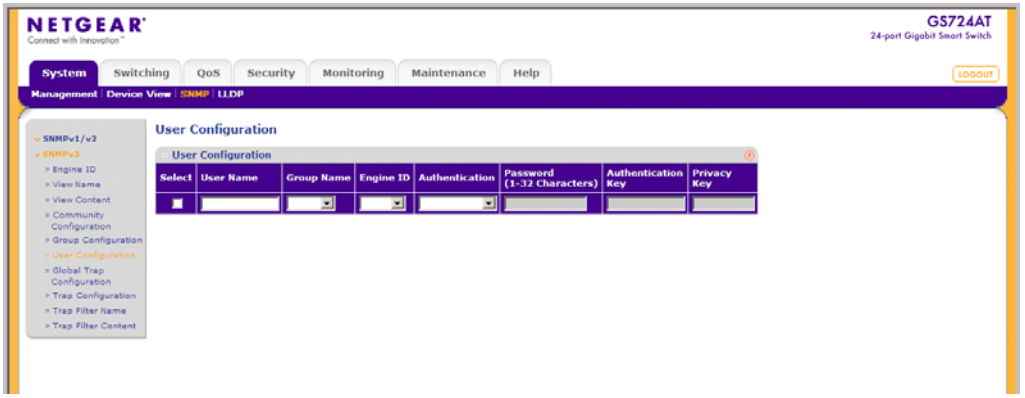


Figure 3-13

The SNMPv3 User Configuration screen contains the following fields:

- **User Name** – Enter the user name. The field range is up to 30 alphanumeric characters.
- **Group Name** – Enter the group name from a list of user-defined SNMP groups. SNMP groups are defined in the Groups screen.
- **Engine ID** – Select either the local or remote SNMP entity to which the user is connected. Changing or removing the local SNMP Engine ID deletes the SNMPv3 user database.
- **Authentication** – Select the method used to authenticate users. The possible field values are:
  - MD5 Key – Users are authenticated using the HMAC-MD5 algorithm.
  - SHA Key – Users are authenticated using the HMAC-SHA-96 authentication level.
  - MD5 Password – The HMAC-MD5-96 password is used for authentication. The user must enter a password.

  - SHA Password – Users are authenticated using the HMAC-SHA-96 authentication level. The user must enter a password.
  - None – No user authentication is used.
- **Password (1-32 Characters)** – Enter the password for the group member.
- **Authentication Key** – Enter the HMAC-MD5-96 or HMAC-SHA-96 authentication level. The authentication and privacy keys are entered to define the authentication key. If only authentication is required, 16 bytes are defined. If both privacy and authentication are required, 32 bytes are defined. Each byte in hexadecimal character strings is two hexadecimal digits. Each byte can be separated by a period or a colon.
- **Privacy Key** – Enter the privacy key (LSB). If only authentication is required, 20 bytes are defined. If both privacy and authentication are required, 36 bytes are defined. Each byte in hexadecimal character strings is two hexadecimal digits. Each byte can be separated by a period or colon.

2. Select the user entry.
3. Enter the **User Name** in the provided field in the first row.
4. Select the **Group Name** and **Engine ID** from the lists in the provided fields in the first row.
5. Select the **Authentication** method from the list in the provided field in the first row.
6. If you selected a password method of **Authentication**, enter the **Password** in the provided field in the first row. If you selected a key method of **Authentication**, enter the **Authentication Key** and **Privacy Key** in the provided fields in the first row.
7. Click **Apply** to update the device.

To add a new SNMPv3 user:

1. Click **System > SNMP > SNMPv3** > **Users Configuration**. The SNMPv3 User Configuration screen displays.
2. Enter the **User Name** in the provided field in the first row.
3. Select the **Group Name** and **Engine ID** from the lists in the provided fields in the first row.
4. Select the **Authentication** method from the list in the provided field in the first row.
5. If you selected a password method of **Authentication**, enter the **Password** in the provided field in the first row. If you selected a key method of **Authentication**, enter the **Authentication Key** and **Privacy Key** in the provided fields in the first row.
6. Click **Add** to update the device.

To remove an SNMPv3 user:

1. Click **System > SNMP > SNMPv3** > **Users Configuration**. The SNMPv3 User Configuration screen displays.
2. Select the user entry.
3. Click **Delete** to remove the entry.

Global Trap Configuration

The SNMPv3 Global Trap Settings screen contains parameters for defining SNMP notification parameters.

To configure SNMP notification global parameters:

1. Click **System > SNMP > SNMPv3** > **Global Trap Configuration**. The SNMPv3 Global Trap Settings screen displays:

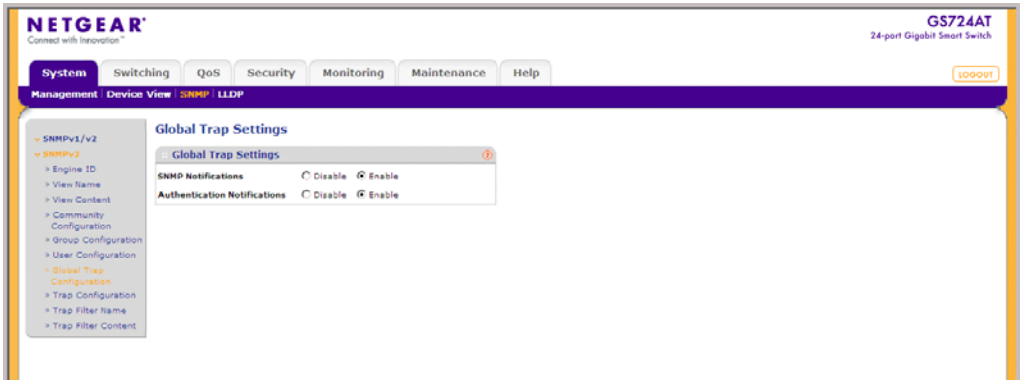


Figure 3-14

The SNMPv3 Global Trap Settings screen contains the following fields:

- **SNMP Notifications** – Select whether or not the device can send SNMP notifications. The possible field values are:
  - Enable – Enable SNMP notifications.
  - Disable – Disable SNMP notifications.
- **Authentication Notifications** – Select the SNMP authentication failure notification status on the device. The possible field values are:
  - Enable – Enable the device to send authentication failure notifications.

– Disable – Disable the device from sending authentication failure notifications.

2. Select either Enable or Disable in the **SNMP Notifications** provided field.
3. Select either Enable or Disable in the **Authentication Notifications** provided field.
4. Click **Apply** to update the device.

Trap Configuration

The SNMPv3 Trap Configuration screen contains information for defining filters that determine whether traps are sent to specific users, and the trap type sent. SNMP notification filters provide the following services:

- Identifying Management Trap Targets
- Defining Trap Filtering
- Selecting Trap Generation Parameters
- Providing Access Control Checks

To define trap station management:

1. Click **System > SNMP > SNMPv3** > **Trap Configuration**. The SNMPv3 Trap Configuration screen displays:

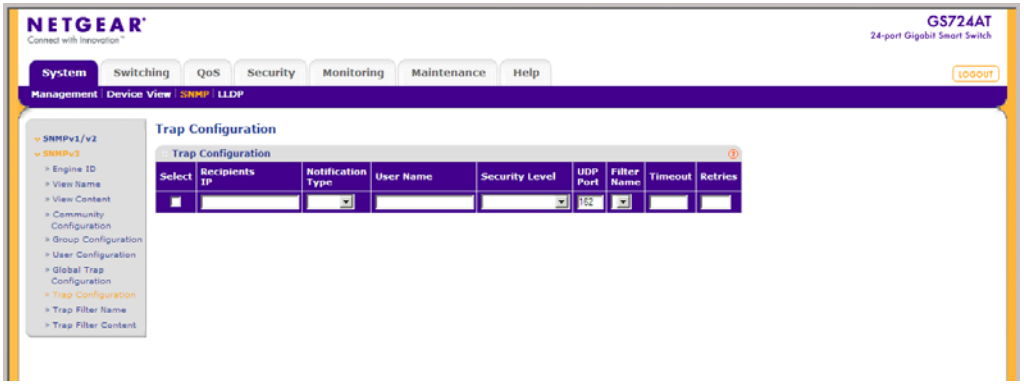


Figure 3-15

The SNMPv3 Trap Configuration screen contains the following fields:

- **Recipients IP** – Enter the IP address to which the traps are sent.
- **Notification Type** – Select the type of notification sent. The possible field values are:
  - Traps – Traps are sent.

  - Informs – Informs are sent.
- **User Name** – Enter the user name. The field range is up to 30 alphanumeric characters.
- **Security Level** – Select the security level attached to the group. Security levels apply to SNMPv3 only. The possible field values are:
  - No Authentication – Neither the Authentication nor the Privacy security levels are assigned to the group.
  - Authentication – Authenticates SNMP messages and ensures that the SNMP message's origin is authenticated.
  - Privacy – Encrypts SNMP messages.
- **UDP Port** – Enter the UDP port used to send notifications. The default is 162.
- **Filter Name** – Select the SNMP filter name from the list of SNMP Notification filters.
- **Timeout** – Enter the amount of time (in seconds) the device waits before re-sending informs. The default is 15 seconds.
- **Retries** – Enter the amount of times the device re-sends an inform request. The default is 3 seconds.

2. Enter the **Recipients IP** address in the provided field in the first row.
3. Select either Traps or Informs in the **Notification Type** provided field in the first row.
4. Enter the **User Name** in the provided field in the first row.
5. Select the **Security Level** from the list in the provided field in the first row.
6. Enter the **UDP Port** in the provided field in the first row.
7. Select the **Filter Name** from the list in the provided field in the first row.
8. Enter the **Timeout** and **Retries** in the provided fields in the first row.
9. Click **Apply** to update the device.

To add a new trap:

1. Click **System > SNMP > SNMPv3** > **Trap Configuration**. The SNMPv3 Trap Configuration screen displays.
2. Enter the **Recipients IP** address in the provided field in the first row.
3. Select either Traps or Informs in the **Notification Type** provided field in the first row.
4. Enter the **User Name** in the provided field in the first row.
5. Select the **Security Level** from the list in the provided field in the first row.

6. Enter the **UDP Port** in the provided field in the first row.
7. Select the **Filter Name** from the list in the provided field in the first row.
8. Enter the **Timeout** and **Retries** in the provided fields in the first row.
9. Click **Add** to update the device.

To remove a trap:

1. Click **System > SNMP > SNMPv3** > **Trap Configuration**. The SNMPv3 Trap Configuration screen displays.
2. Select the trap entry.
3. Click **Delete** to remove the entry.

Trap Filter Name

The SNMPv3 Trap Filter Name screen permits filtering traps based on OIDs. Each OID is linked to a device feature or a portion of a feature. The SNMPv3 Trap Filter Name screen also allows network managers to filter notifications.

To define the SNMPv3 Trap Filter Name:

1. Click **System > SNMP > SNMPv3** > **Trap Filter Name**. The SNMPv3 Trap Filter Name screen displays:

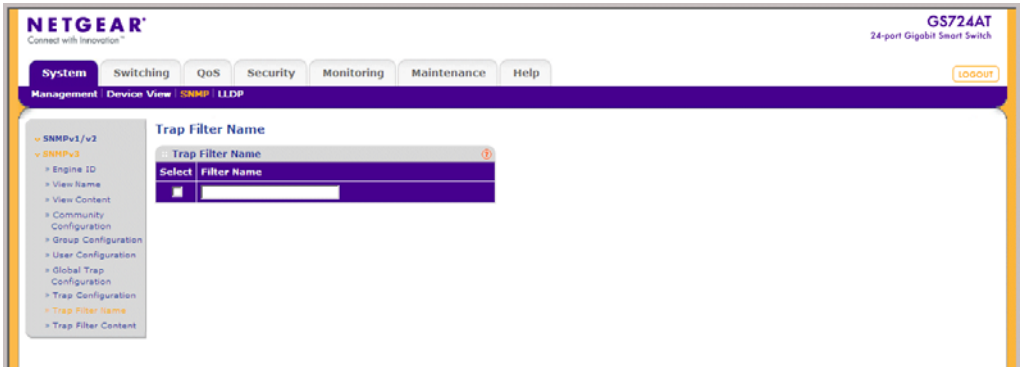


Figure 3-16

The SNMPv3 Trap Filter Name screen contains the following field:

- **Filter Name** – Enter the user-defined notification filter name.

2. Select the trap filter entry.

3. Enter the trap **Filter Name** in the provided field in the first row.
4. Click **Apply** to update the device.

To add a new trap filter name:

1. Click **System > SNMP > SNMPv3** > **Trap Filter Name**. The SNMPv3 Trap Filter Name screen displays.
2. Enter the trap **Filter Name** in the provided field in the first row.
3. Click **Add** to update the device.

To remove a trap filter name:

1. Click **System > SNMP > SNMPv3** > **Trap Filter Name**. The SNMPv3 Trap Filter Name screen displays.
2. Select the trap filter name entry.
3. Click **Delete** to remove the entry.

Trap Filter Content

The SNMPv3 Trap Filter Content screen permits filtering traps based on OIDs. Each OID is linked to a device feature or a portion of a feature. The SNMPv3 Trap Filter Content screen also allows network managers to filter notifications.

To define SNMPv3 Trap Filter settings:

1. Click **System > SNMP > SNMPv3** > **Trap Filter Content**. The SNMPv3 Trap Filter Content screen displays:

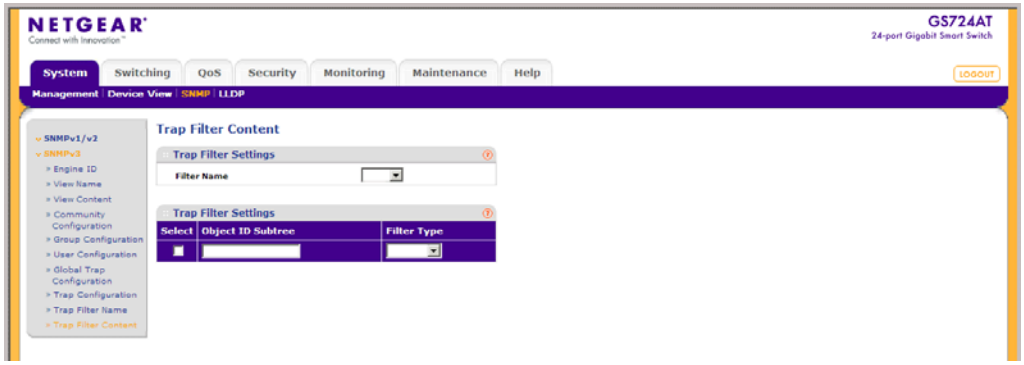


Figure 3-17

The SNMPv3 Trap Filter Content screen contains the following fields:

Trap Filter Settings

- **Filter Name** – Select the user-defined notification filter from the list.

Trap Filter Settings

- **Object ID Subtree** – Enter the OID for which notifications are sent or blocked. If a filter is attached to an OID, traps or informs are generated and sent to the trap recipients. OIDs are selected from either the Select field or the Object ID field.
- **Filter Type** – Select whether to send traps or informs relating to the selected OID. The possible field values are:
  - Excluded – Do not send traps or informs.
  - Included – Send traps or informs.

2. Select the **Filter Name** from the list in the provided field.
3. Select the trap filter content entry from the OID table.
4. Enter the **Object ID Subtree** in the provided field in the first row.
5. Select the **Filter Type** from the list in the provided field in the first row.
6. Click **Apply** to update the device.

To add a new trap filter content entry:

1. Click **System > SNMP > SNMPv3** > **Trap Filter Content**. The SNMPv3 Trap Filter Content screen displays.
2. Select the **Filter Name** from the list in the provided field.
3. Enter the **Object ID Subtree** in the provided field in the first row.
4. Select the **Filter Type** from the list in the provided field in the first row.
5. Click **Add** to update the device.

To remove a trap filter content entry:

1. Click **System > SNMP > SNMPv3** > **Trap Filter Content**. The SNMPv3 Trap Filter Content screen displays.
2. Select the **Filter Name** from the list in the provided field.
3. Select the trap filter content entry.
4. Click **Delete** to remove the entry.

LLDP

The Link Layer Discovery Protocol (LLDP) allows network managers to troubleshoot and enhance network management by discovering and maintaining network topologies over multi-vendor environments. LLDP discovers network neighbors by standardizing methods for network devices to advertise themselves to other system, and to store discovered information. Device discovery information includes:

- Device Identification
- Device Capabilities
- Device Configuration

The advertising device transmits multiple advertisement message sets in a single LAN packet. The multiple advertisement sets are sent in the packet Type Length Value (TLV) field. LLDP devices must support chassis and port ID advertisement, as well as system name, system ID, system description, and system capability advertisements.

The **LLDP** menu enables configuration of LLDP parameters and contains the following options:

- "Basic"
- "Advanced"

Basic

The LLDP **Basic** menu contains the following option:

- "LLDP Configuration"

LLDP Configuration

The Basic LLDP Configuration screen allows network managers to assign global LLDP and LLDP-MED (LLDP – Media Endpoint Discovery) parameters.

To configure LLDP settings:

1. Click **System > LLDP > Basic** > **LLDP Configuration**. The Basic LLDP Configuration screen displays:

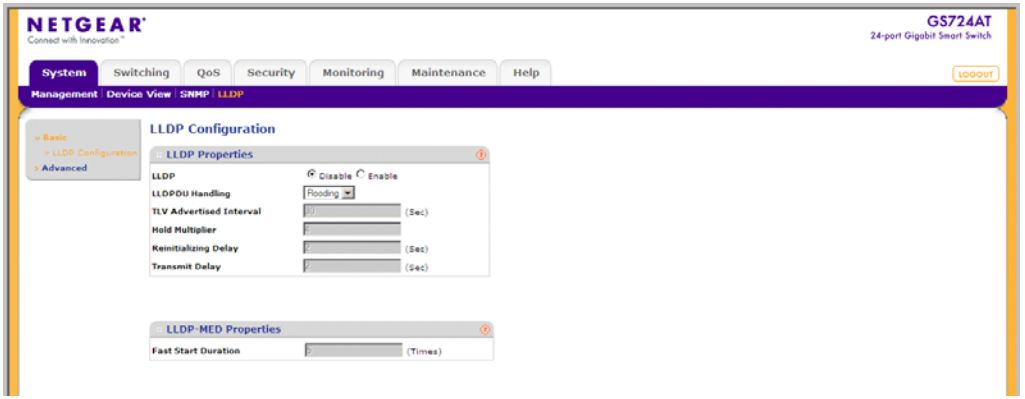


Figure 3-18

The Basic LLDP Configuration screen contains the following fields:

LLDP Properties

- **LLDP** – Select the LLDP global status on the device. The possible field values are:
  - Disable – Disable LLDP on the device. This is the default value.
  - Enable – Enable LLDP on the device.
- **LLDPDU Handling** – Select LLDPDU (LLDP Data Unit) packet handling when LLDP is disabled. The possible field values are:
  - Flooding – LLDPDU packets are flooded to all ports in the system.
  - Filtering – LLDPDU packets are filtered. This is the default.
- **TLV Advertised Interval** – Enter the rate in seconds at which LLDP advertisement updates are sent. The possible field range is 5 - 32768 seconds. The default value is 30 seconds.
- **Hold Multiplier** – Enter the amount of time that LLDP packets are held before the packets are discarded, measured in multiples of the TLV Advertised Interval. The possible field range is 2 - 10. The field default is 4. For example, if the TLV Advertised Interval is 30 seconds and the Hold Multiplier is 4, then the LLDP packets are discarded after 120 seconds.

- **Reinitializing Delay** – Enter the amount of time in seconds that passes between disabling and reinitializing LLDP. The possible field range is 1 - 10 seconds. The field default is 2 seconds.
- **Transmit Delay** – Enter the amount of time in seconds that passes between successive LLDP frame transmissions due to changes in the LLDP local systems MIB. The possible field value is 1 - 8192 seconds. The field default is 2 seconds.

LLDP-MED Properties

- **Fast Start Duration** – Enter the number of times LLDP packets are sent when the LLDP-MED Fast Start mechanism is initialized, which occurs when a new Endpoint device links with the LLDP-MED Network Connectivity Device.

2. Select the LLDP global status on the device by selecting Enable or Disable in the **LLDP** field.
3. If you selected Disable in the **LLDP** field, select the type of **LLDPDU Handling** from the list in the provided field.
4. If you selected Enable in the **LLDP** field, enter the **TLV Advertised Interval**, **Hold Multiplier**, **Reinitializing Delay**, **Transmit Delay** and **Fast Start Duration** in the provided fields.
5. Click **Apply** to update the device.

Advanced

The LLDP **Advanced** menu contains the following options:

- "LLDP Configuration"
- "LLDP Port Settings"
- "LLDP-MED Network Policy"
- "LLDP-MED Port Settings"
- "Local Information"
- "Neighbors Information"

LLDP Configuration

The Advanced LLDP Configuration screen allows network managers to assign global LLDP and LLDP-MED (LLDP – Media Endpoint Discovery) parameters.

To configure LLDP settings:

1. Click **System > LLDP > Advanced** > **LLDP Configuration**. The Advanced LLDP Configuration screen displays:

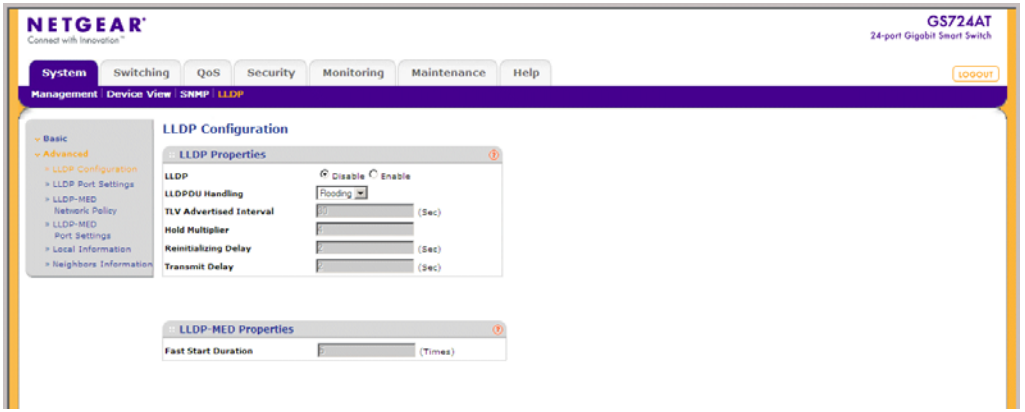


Figure 3-19

The Advanced LLDP Configuration screen contains the following fields:

LLDP Properties

- **LLDP** – Select the LLDP global status on the device. The possible field values are:
  - Disable – Disable LLDP on the device. This is the default value.
  - Enable – Enable LLDP on the device.
- **LLDPDU Handling** – Select LLDPDU (LLDP Data Unit) packet handling when LLDP is disabled. The possible field values are:
  - Flooding – LLDPDU packets are flooded to all ports in the system.
  - Filtering – LLDPDU packets are filtered. This is the default.
- **TLV Advertised Interval** – Enter the rate in seconds at which LLDP advertisement updates are sent. The possible field range is 5 - 32768 seconds. The default value is 30 seconds.
- **Hold Multiplier** – Enter the amount of time that LLDP packets are held before the packets are discarded, measured in multiples of the TLV Advertised Interval. The possible field range is 2 - 10. The field default is 4. For example, if the TLV Advertised Interval is 30 seconds and the Hold Multiplier is 4, then the LLDP packets are discarded after 120 seconds.

- **Reinitializing Delay** – Enter the amount of time in seconds that passes between disabling and reinitializing LLDP. The possible field range is 1 - 10 seconds. The field default is 2 seconds.
- **Transmit Delay** – Enter the amount of time in seconds that passes between successive LLDP frame transmissions due to changes in the LLDP local systems MIB. The possible field value is 1 - 8192 seconds. The field default is 2 seconds.

LLDP-MED Properties

- **Fast Start Duration** – Enter the number of LLDP packets sent when the LLDP-MED Fast Start mechanism is initialized, which occurs when a new Endpoint device links with the LLDP-MED Network Connectivity Device.

2. Select the LLDP global status on the device by selecting Enable or Disable in the **LLDP** field.
3. If you selected Disable in the **LLDP** field, select the type of **LLDPDU Handling** from the list in the provided field.
4. If you selected Enable in the **LLDP** field, enter the **TLV Advertised Interval**, **Hold Multiplier**, **Reinitializing Delay**, **Transmit Delay** and **Fast Start Duration** in the provided fields.
5. Click **Apply** to update the device.

LLDP Port Settings

The LLDP Port Settings screen allows network administrators to define LLDP port settings, including the port type, the LLDP port state, and the type of port information advertised.

To define LLDP Port Properties:

1. Click **System > LLDP > Advanced** > **LLDP Port Settings**. The LLDP Port Settings screen displays:

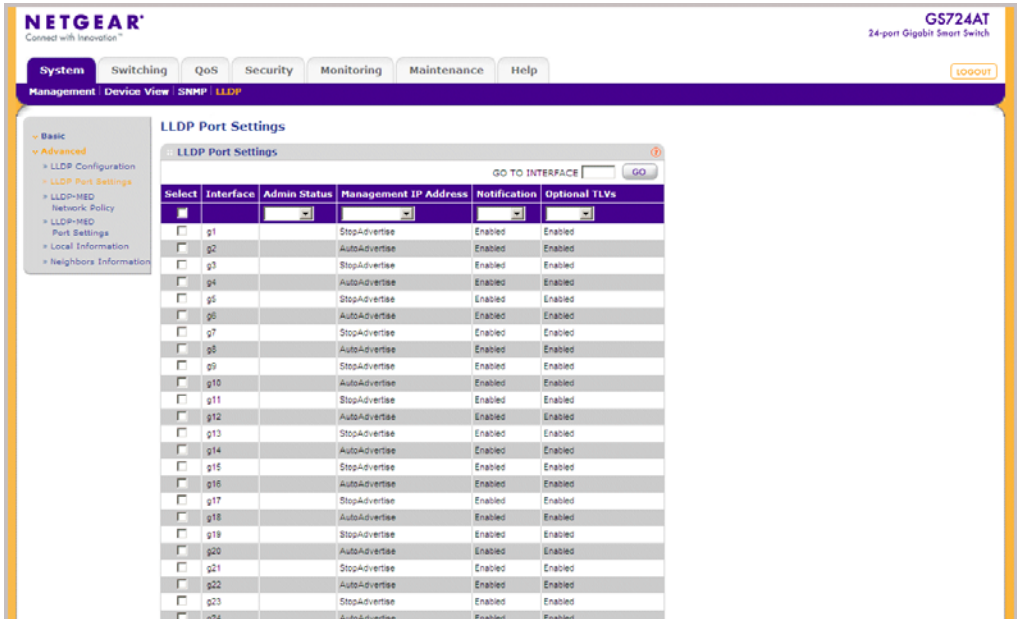


Figure 3-20

The LLDP Port Settings screen contains the following fields:

- **Interface** – Displays the specific interface for which LLDP parameters are defined.
- **Admin Status** – Select the LLDP packet transmitting and receiving status of the interface. The possible field values are:
  - Tx Only – Enable transmitting LLDP packets only.
  - Rx Only – Enable receiving LLDP packets only.
  - Tx & Rx – Enable transmitting and receiving LLDP packets.
  - Disable – Disable LLDP on the interface.
- **Management IP Address** – Select the management IP address that is advertised from the interface. The possible field values are:
  - StopAdvertise – Stop advertising the management IP address from the interface.

  - AutoAdvertise – Advertise the device's current IP address as the management IP address.
- **Notification** – Select the topology change notification status on the interface.
  - Enable – Enable topology change notification on the interface. This is the default value.
  - Disable – Disable topology change notification on the interface.
- **Optional TLVs** – Select whether optional TLVs are advertised from the interface.
  - Enable – Enable optional TLVs on the interface. This is the default value.
  - Disable – Disable optional TLVs on the interface.

2. Select the **Interface** to configure.
3. Select the **Admin Status** from the list in the provided field in the first row.
4. Select the **Management IP Address** from the list in the provided field in the first row.
5. Select the **Notification** status from the list in the provided field in the first row.
6. Select the **Optional TLVs** status from the list in the provided field in the first row.
7. Click **Apply** to update the device.

LLDP-MED Network Policy

LLDP Media Endpoint Discovery (LLDP-MED) increases network flexibility by allowing different IP systems to coexist on a single network.

LLDP:

- Provides detailed network topology information, including what devices are located on the network, and where the devices are located. For example, what IP phone is connected to what port, what software is running on what switch, and what port is connected to what PC.
- Automatically deploys policies over networks for:
  - QoS Policies
  - Voice VLANs
- Provides Emergency Call Service (E-911) via IP Phone location information.
- Provides troubleshooting information. LLDP-MED sends network managers alerts for:
  - Port speed and duplex mode conflicts
  - QoS policy misconfigurations

The LLDP-MED Network Policy screen allows network administrators to define LLDP-MED network policies, which include the application, VLAN ID, VLAN type, user priority and DSCP value.

To configure LLDP-MED Network Policy:

1. Click **System > LLDP > Advanced** > **LLDP-MED Network Policy**. The LLDP-MED Network Policy screen displays:

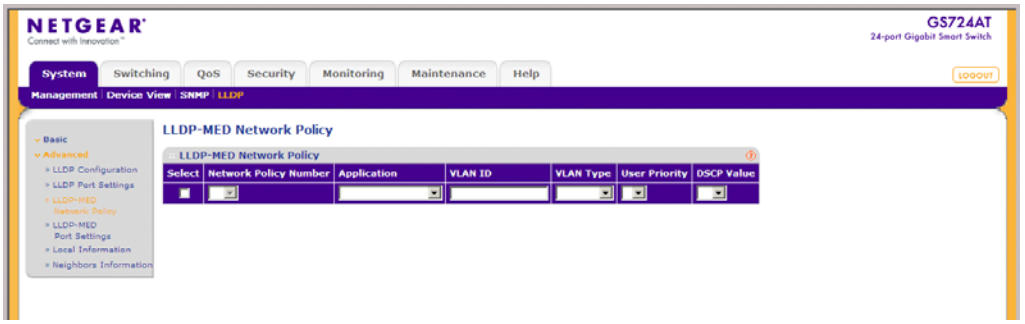


Figure 3-21

The LLDP-MED Network Policy screen contains the following fields:

- **Network Policy Number** – Select the network policy number. The field range is 1 - 32.
- **Application** – Select the application for which the network policy is defined. The possible field values are:
  - Voice – The network policy is defined for a Voice application.
  - Voice Signaling – The network policy is defined for a Voice Signaling application.
  - Guest Voice – The network policy is defined for a Guest Voice application.
  - Guest Voice Signaling – The network policy is defined for a Guest Voice Signaling application.
  - Softphone Voice – The network policy is defined for a Softphone Voice application.
  - Video Conferencing – The network policy is defined for a Video Conferencing application.
  - Streaming Video – The network policy is defined for a Streaming Video application.
  - Video Signaling – The network policy is defined for a Video Signaling application.
- **VLAN ID** – Enter the VLAN ID for which the network policy is defined.

- **VLAN Type** – Select the VLAN type for which the network policy is defined. The possible field values are:
  - Tagged – The network policy is defined for tagged VLANs.
  - Untagged – The network policy is defined for untagged VLANs.
- **User Priority** – Select the priority assigned to the network application. The field range is 0 - 7.
- **DSCP Value** – Select the DSCP value assigned to the network policy. The possible field value is 0 - 63.

2. Select the Network Policy entry to configure.
3. Select the **Network Policy Number** from the list in the provided field in the first row.
4. Enter the **VLAN ID** in the provided field in the first row.
5. Select the **VLAN Type** from the list in the provided field in the first row.
6. Select the **User Priority** from the list in the provided field in the first row.
7. Select the **DSCP Value** from the list in the provided field in the first row.
8. Click **Apply** to update the device.

To add a new network policy entry:

1. Click **System > LLDP > Advanced** > **LLDP-MED Network Policy**. The LLDP-MED Network Policy screen displays.
2. Select the **Network Policy Number** from the list in the provided field in the first row.
3. Enter the **VLAN ID** in the provided field in the first row.
4. Select the **VLAN Type** from the list in the provided field in the first row.
5. Select the **User Priority** from the list in the provided field in the first row.
6. Select the **DSCP Value** from the list in the provided field in the first row.
7. Click **Add** to update the device.

To remove a network policy entry:

1. Click **System > LLDP > Advanced** > **LLDP-MED Network Policy**. The LLDP-MED Network Policy screen displays.
2. Select the Network Policy entry.
3. Click **Delete** to remove the entry.

LLDP-MED Port Settings

The LLDP-MED Port Settings screen contains parameters for assigning LLDP-MED network policies to specific ports.

To configure LLDP-MED port settings:

1. Click **System > LLDP > Advanced** > **LLDP-MED Port Settings**. The LLDP-MED Port Settings screen displays:

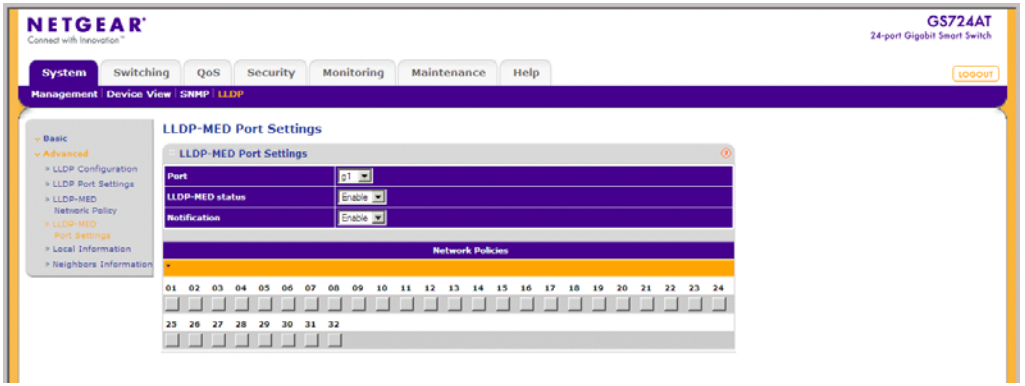


Figure 3-22

The LLDP-MED Port Settings screen contains the following fields:

- **Port** – Select the port to configure.
- **LLDP-MED Status** – Select the LLDP-MED status for the selected port. The possible field values are:
  - Enable – Enable LLDP-MED on the selected port.
  - Disable – Disable LLDP-MED on the selected port.
- **Notification** – Select the notification status for the selected port. The possible field values are:
  - Enable – Enable notification on the selected port.
  - Disable – Disable notification on the selected port.
- **Network Policies** – Click on the gold button to select the network policy numbers to apply to the selected port.

2. Select the **Port** from the list in the provided field.
3. Select the **LLDP-MED Status** of the selected port from the list in the provided field.

4. Select the **Notification Status** of the selected port from the list in the provided field.
5. Click on the **Network Policies** gold bar and select the network policy numbers to apply to the port.
6. Click **Apply** to update the device.

Local Information

The LLDP Local Information screen enables viewing detailed port LLDP-MED information.

To view LLDP-MED port information:

1. Click **System > LLDP > Advanced** > **Local Information**. The LLDP-MED Local Information screen displays:

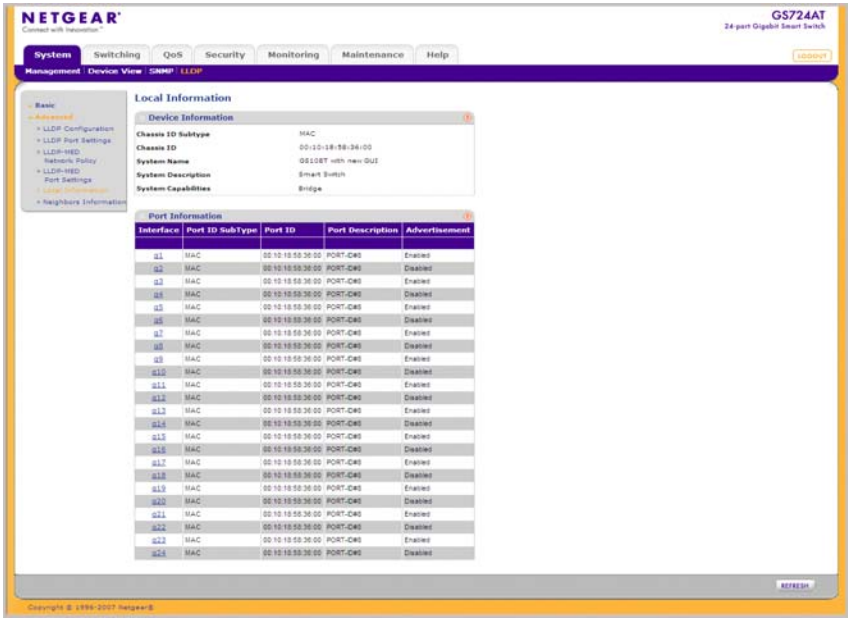


Figure 3-23

The LLDP-MED Local Information screen contains the following fields:

Device Information

- **Chassis ID Subtype** – Displays the chassis ID type. For example, MAC address.
- **Chassis ID** – Displays the chassis identification of the device transmitting the LLDP frame.

- **System Name** – Displays the administratively assigned device name.
- **System Description** – Describes the device. For example, system hardware type and version, operating system and network software.
- **System Capabilities** – Describes the primary device function. For example: Bridge, Router.

Port Information

- **Interface** – Displays the port number.
- **Port ID Subtype** – Displays the port ID type. For example, MAC address.
- **Port ID** – Displays the port identification of the port transmitting the LLDP frame.
- **Port Description** – Displays information about the port, including manufacturer, product name and hardware/software version.
- **Advertisement** – Displays the advertisement status of the port. The possible field values are:
  - Enabled – Advertisement is enabled on the port.
  - Disabled – Advertisement is disabled on the port.

2. Click **Refresh** to refresh the Local Information screen.

To view LLDP-MED detailed port information:

1. Click **System > LLDP > Advanced** > **Local Information**. The LLDP-MED Local Information screen displays.

2. Click the **Interface** to view its detailed information. The Port Information window opens:

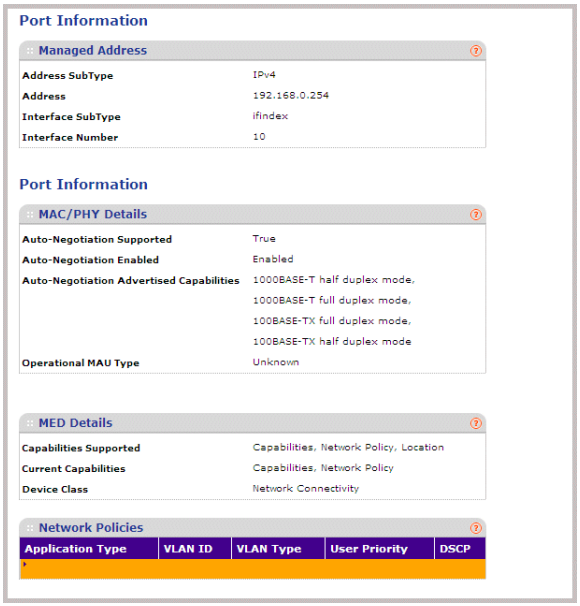


Figure 3-24

The Port Information window contains the following fields:

Managed Address

- **Address Subtype** – Displays the managed address subtype. For example, IPv4.
- **Address** – Displays the managed address.
- **Interface Subtype** – Displays the port subtype.
- **Interface Number** – Displays the port number.

MAC/PHY Details

- **Auto-Negotiation Supported** – Displays the port speed auto-negotiation support status. The possible values are:
  - True – Auto-negotiation is supported on the port.
  - False – Auto-negotiation is not supported on the port.
- **Auto-Negotiation Enabled** – Displays the port speed auto-negotiation active status. The possible values are:

  - Enabled – Auto-negotiation is enabled on the port.
  - Disabled – Auto-negotiation is not enabled on the port.
- **Auto-Negotiation Advertised Capabilities** – Displays the port speed auto-negotiation capabilities. For example, 1000BASE-T half duplex mode, 100BASE-TX full duplex mode.
- **Operational MAU Type** – Displays the Medium Attachment Unit (MAU) type. The MAU performs physical layer functions, including digital data conversion from the Ethernet interfaces' collision detection and bit injection into the network. For example, 100BASE-TX full duplex mode.

MED Details

- **Capabilities Supported** – Displays the MED capabilities enabled on the port.
- **Current Capabilities** – Capabilities indicates the TLV is advertised by the port.
- **Device Class** – Network Connectivity indicates the device is a network connectivity device

Network Policies

- **Application Type** – Displays the network policy application type. For example, Voice.
- **VLAN ID** – Displays the network policy VLAN ID.
- **VLAN Type** – Displays the VLAN type for which the network policy is defined. The possible field values are:
  - Tagged – The network policy is defined for tagged VLANs.
  - Untagged – The network policy is defined for untagged VLANs.
- **User Priority** – Displays the network policy user priority.
- **DSCP** – Displays the network policy DSCP.

3. Click the **Network Policies** gold bar to display the network policies applied to the port.

Neighbors Information

The LLDP Neighbors Information screen contains information received from neighboring device LLDP advertisements.

To view LLDP neighbors information:

1. Click **System > LLDP > Advanced** > **Neighbors Information**. The LLDP Neighbors Information screen displays:

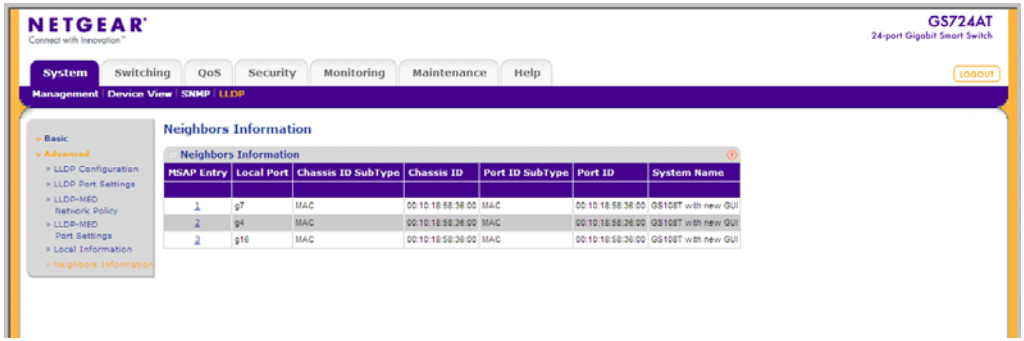


Figure 3-25

The LLDP Neighbors Information screen contains the following fields:

- **MSAP Entry** – Displays the device's Media Service Access Point (MSAP) entry number.
- **Local Port** – Displays the port number.
- **Chassis ID Subtype** – Displays the chassis ID subtype. For example, MAC address.
- **Chassis ID** – Displays the chassis identification of the device transmitting the LLDP frame.
- **Port ID Subtype** – Displays the port ID subtype. For example, MAC address.
- **Port ID** – Displays the port identification of the port transmitting the LLDP frame.
- **System Name** – Displays the administratively assigned device name.

2. Click **Refresh** to refresh the Neighbors Information screen.

To view LLDP Neighbors detailed information:

1. Click **System > LLDP > Advanced** > **Neighbors Information**. The LLDP Neighbors Information screen displays.

2. Click the **MSAP Entry** to view its detailed information. The Neighbors Information window opens:

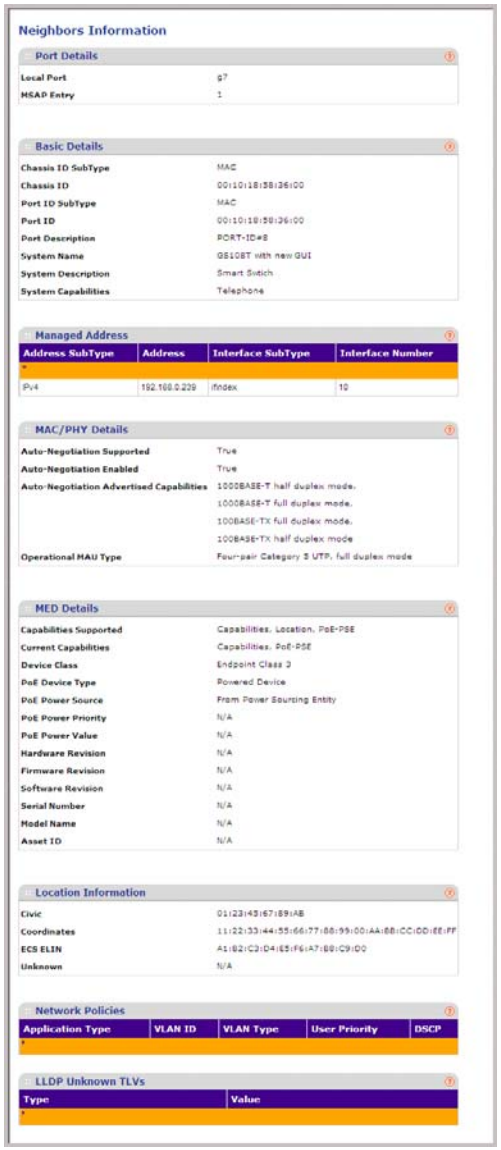


Figure 3-26

The Neighbors Information window contains the following fields:

Port Details

- **Local Port** – Displays the port number.
- **MSAP Entry** – Displays the device's Media Service Access Point (MSAP) entry number.

Basic Details

- **Chassis ID Subtype** – Displays the chassis ID subtype. For example, MAC address.
- **Chassis ID** – Displays the chassis identification of the device transmitting the LLDP frame.
- **Port ID Subtype** – Displays the port ID subtype. For example, IPv4 address.
- **Port ID** – Displays the port identification of the port transmitting the LLDP frame.
- **Port Description** – Displays information about the port, including manufacturer, product name and hardware/software version.
- **System Name** – Displays the administratively assigned device name.
- **System Description** – Describes the device. For example, system hardware type and version, operating system and network software.
- **System Capabilities** – Describes the primary device function. For example: Bridge, Router.

Managed Address

- **Address Subtype** – Displays the managed address subtype. For example, MAC or IPv4.
- **Address** – Displays the managed address.
- **Interface Subtype** – Displays the port subtype.
- **Interface Number** – Displays the port number.

MAC/PHY Details

- **Auto-Negotiation Supported** – Displays the port speed auto-negotiation support status. The possible values are:
  - True – Auto-negotiation is supported on the port.
  - False – Auto-negotiation is not supported on the port.
- **Auto-Negotiation Enabled** – Displays the port speed auto-negotiation active status. The possible values are:
  - Enabled – Auto-negotiation is enabled on the port.

  - Disabled – Auto-negotiation is not enabled on the port.

- **Auto-Negotiation Advertised Capabilities** – Displays the port speed auto-negotiation capabilities. For example, 1000BASE-T half duplex mode, 100BASE-TX full duplex mode.
- **Operational MAU Type** – Displays the Medium Attachment Unit (MAU) type. The MAU performs physical layer functions, including digital data conversion from the Ethernet interfaces' collision detection and bit injection into the network. For example, 100BASE-TX full duplex mode.

MED Details

- **Capabilities Supported** – Displays the MED capabilities enabled on the port.
- **Current Capabilities** – Displays the MED TLVs advertised by the port.
- **Device Class** – Displays the LLDP-MED endpoint device class. The possible device classes are:
  - Endpoint Class 1 – Indicates a generic endpoint class, offering basic LLDP services.
  - Endpoint Class 2 – Indicates a media endpoint class, offering media streaming capabilities as well as all Class 1 features.
  - Endpoint Class 3 – Indicates a communications device class, offering all Class 1 and Class 2 features plus location, 911, Layer 2 switch support and device information management capabilities.
- **PoE Device Type** – Displays the port PoE type. For example, Powered.
- **PoE Power Source** – Displays the port's power source.
- **PoE Power Priority** – Displays the port's power priority.
- **PoE Power Value** – Displays the port's power value.
- **Hardware Revision** – Displays the hardware version.
- **Firmware Revision** – Displays the firmware version.
- **Software Revision** – Displays the software version.
- **Serial Number** – Displays the device serial number.
- **Model Name** – Displays the device model name.
- **Asset ID** – Displays the asset ID.

Location Information

- **Civic** – Displays the device's civic or street address location. For example, 123 45th St E. The field value length range is 6 - 160 characters.
- **Coordinates** – Displays the device's location map coordinates - latitude, longitude and altitude.
- **ECS ELIN** – Displays the device's Emergency Call Service (ECS) Emergency Location Identification Number (ELIN). The field range is 10 - 25.
- **Unknown** – Displays unknown location information.

Network Policies

- **Application Type** – Displays the network policy application type. For example, Voice.
- **VLAN ID** – Displays the VLAN ID for which the network policy is defined.
- **VLAN Type** – Displays the VLAN type for which the network policy is defined. The possible field values are:
  - Tagged – The network policy is defined for tagged VLANs.
  - Untagged – The network policy is defined for untagged VLANs.
- **User Priority** – Displays the network policy user priority.
- **DSCP** – Displays the network policy DSCP.

LLDP Unknown TLVs

- **Type** – Displays the unknown TLV type field.
- **Value** – Displays the unknown TLV value field.

3. Click the **Network Policies** gold bar to display the network policies applied to the MSAP entry.
4. Click the **LLDP Unknown TLVs** gold bar to display the MSAP entry's unknown TLVs.

Chapter 4
Configuring Switching Settings

Configuring Switching Settings

The navigation pane at the top of the web browser interface contains a Switching tab that enables you to manage your GS700AT Series Smart Switch with features under the following main headings:

- "Ports"
- "LAG"
- "VLAN"
- "Voice VLAN"
- "STP"
- "Multicast"
- "Address Table"

The description that follows in this chapter describes configuring and managing switching settings in the GS700AT Series Smart Switch.

Ports

The **Ports** menu contains the following option:

- "Port Configuration"

Port Configuration

The Port Configuration screen contains fields for defining port parameters enabled on the ports.

To configure port parameters:

1. Click **Switching** > **Ports** > **Port Configuration**. The Port Configuration screen displays:

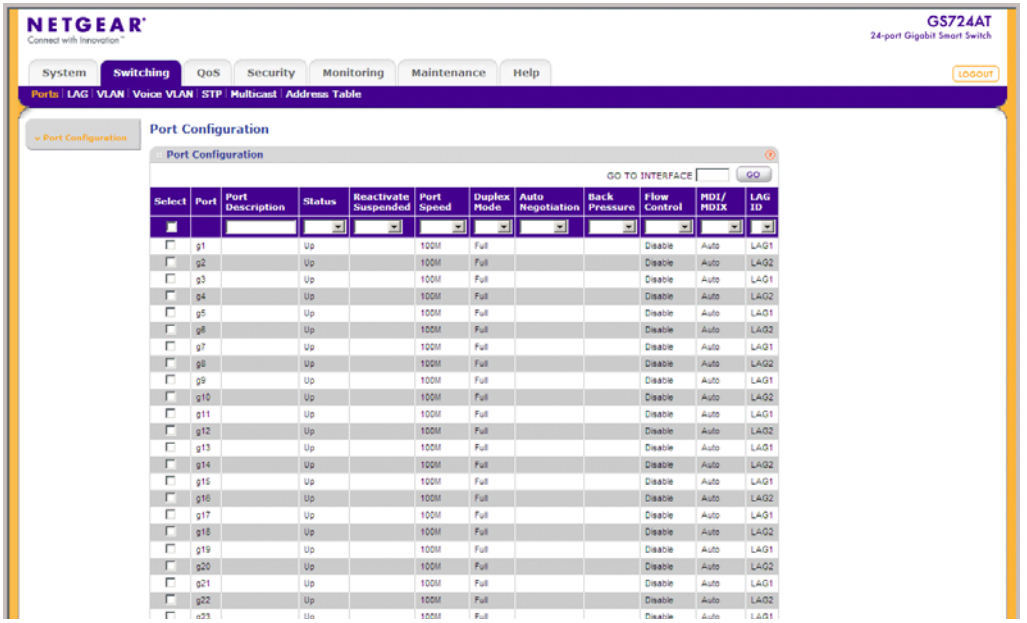


Figure 4-1

The Port Configuration screen contains the following fields:

- **Port** – Displays the port number.
- **Port Description** – Enter a user-defined port description.
- **Status** – Select the port's operational status. The possible field values are:
  - Up – The port is operational.
  - Down – The port is not operational.
- **Reactivate Suspended** – Select the reactivation status for a port disabled through the locked port security option. The possible field values are:
  - Enable – Enable reactivation.
  - Disable – Disable reactivation.

- **Port Speed** – Select the data transmission rate for the port. The port type determines which speed setting options are available. Port speeds can only be configured when auto negotiation is disabled. The possible field values are:
  - 10M – The port is currently operating at 10 Mbps.
  - 100M – The port is currently operating at 100 Mbps.
  - 1000M – The port is currently operating at 1000 Mbps.
- **Duplex Mode** – Select the port duplex mode. This field is configurable only when auto negotiation is disabled and the port speed is set to 10M or 100M. The possible field values are:
  - Half – The interface supports transmission between the device and the client in only one direction at a time.
  - Full – The interface supports transmission between the device and its link partner in both directions simultaneously.
  - Auto – The interface supports transmission between the device and the link partner based on the transmission mode of the link partner.
- **Auto Negotiation** – Select the port auto negotiation status. Auto negotiation is a protocol between two link partners that enables a port to advertise its transmission rate, duplex mode, and flow control abilities to its partner. The possible field values are:
  - Enable – Enable auto negotiation.
  - Disable – Disable auto negotiation.
- **Back Pressure** – Select the back pressure mode of the Port. Back Pressure mode is used with half duplex mode to disable ports from receiving messages. Back Pressure mode is disabled by default. The possible field values are:
  - Enable – Enable back pressure mode.
  - Disable – Disable back pressure mode.
- **Flow Control** – Select the flow control status of the port. Operates when the port is in full duplex mode. Flow control is disabled by default. The possible field values are:
  - Enable – Enable flow control.
  - Disable – Disable Flow control.

- **MDI/MDIX** – Select the MDI/MDIX status of the port. Hubs and switches are deliberately wired opposite the way end stations are wired, so that when a hub or switch is connected to an end station, a straight through Ethernet cable can be used and the pairs will match up properly. When two hubs or switches are connected to each other or two end stations are connected to each other, a crossover cable is used to ensure that the correct pairs are connected. The possible field values are:
  - Auto – Provide automatic cable type detection.
  - MDI (Media Dependent Interface) – Connect end stations.
  - MDIX (Media Dependent Interface with Crossover) – Connect HUBs and switches.
- **LAG ID** – Select the LAG ID to which the selected port is assigned.

2. Select the interface.
3. Enter or modify the fields in the first row.
4. Click **Apply** to update the device.

LAG

A Link Aggregated Group (LAG) optimizes port usage by linking a group of ports together to form a single LAG. Aggregating ports multiplies the bandwidth between the devices, increases port flexibility, and provides link redundancy. Ports added to a LAG lose their individual port configuration. When ports are removed from the LAG, the original port configuration is applied to the ports. Ensure the following, when configuring LAGs:

- All ports within a LAG must be of the same media type.
- A VLAN is not configured on the port.
- The port is not assigned to a different LAG.
- Auto-negotiation mode is not configured on the port.
- The port is in full-duplex mode.
- All ports in the LAG have the same ingress filtering and tagged modes.
- All ports in the LAG have the same back pressure and flow control modes.
- All ports in the LAG have the same priority.
- All ports in the LAG have the same transceiver type.
- The device supports up to eight LAGs with eight ports in each LAG.

- LACP LAGs support up to 16 ports, with eight ports active at any given time.

The LAG menu contains the following options:

- "Basic"
- "Advanced"

Basic

The LAG **Basic** menu contains the following options:

- "LAG Configuration"
- "LAG Membership"

LAG Configuration

The Basic LAG Configuration screen contains fields for configuring LAG parameters. The system supports 8 LAGs, and each LAG can contain up to 8 ports.

To define LAG parameters:

1. Click **Switching > LAG > Basic > LAG Configuration**. The Basic LAG Configuration screen displays:

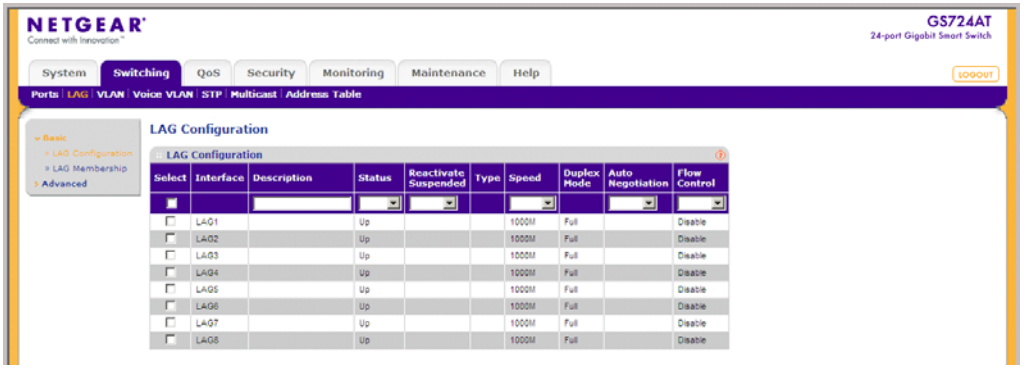


Figure 4-2

The Basic LAG Configuration screen contains the following fields:

- **Interface** – Displays the LAG number.
- **Description** – Enter a user-defined LAG description.
- **Status** – Select the current link operation. The possible field values are:

  - Up – The LAG is currently linked and forwarding traffic.
  - Down – The LAG is currently not linked.
- **Reactivate Suspended** – Select the action to apply to a suspended LAG. The possible field values are:
  - Enable – Reactivate the suspended LAG.
  - Disable – Do not reactivate the suspended LAG.
- **Type** – Displays the LAG type. The possible field values are:
  - Static – The LAG is configured manually.
  - LACP – The LAG is configured automatically.
- **Speed** – Select the data transmission rate for the LAG. The LAG type determines what speed setting options are available. The possible field values are:
  - 10M – The LAG is currently operating at 10 Mbps.
  - 100M – The LAG is currently operating at 100 Mbps.
  - 1000M – The LAG is currently operating at 1000 Mbps.
- **Duplex Mode** – Displays the duplex mode of the LAG. The possible field value is:
  - Full – The interface supports transmission between the device and its link partner in both directions simultaneously.
- **Auto Negotiation** – Select the auto negotiation status of the LAG. Auto Negotiation is a protocol between two link partners that enables a port to advertise its transmission rate, duplex mode, and flow control abilities to its partner. Auto Negotiation is enabled by default. The possible field values are:
  - Enable – Enable auto negotiation.
  - Disable – Disable auto negotiation.
- **Flow Control** – Select the flow control status of the LAG. Operates when the LAG is in full duplex mode. Flow Control is disabled by default. The possible field values are:
  - Enable – Enable flow control.
  - Disable – Disable flow control.

2. Select the interface.

3. Enter or modify the fields in the first row.

4. Click **Apply** to update the device.

LAG Membership

The Basic LAG Membership screen allows network managers to assign ports to LAGs.

To assign ports to LAGs:

1. Click **Switching > LAG > Basic > LAG Membership**. The Basic LAG Membership screen displays:

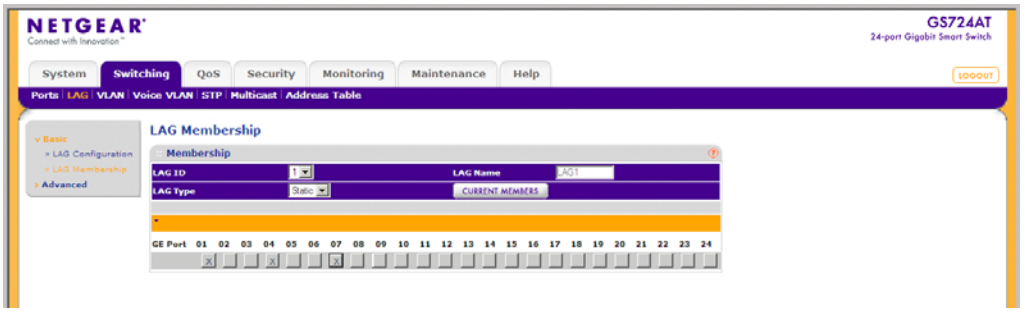


Figure 4-3

The Basic LAG Membership screen contains the following fields:

- **LAG ID** – Select the LAG ID.
- **LAG Name** – Displays the user-defined LAG name.
- **LAG Type** – Select the LAG type. The possible field values are:
  - Static – The LAG is configured manually.
  - LACP – The LAG is configured dynamically.

2. Select the **LAG ID** and **LAG Type**.
3. Click on the gold button. The port panel displays.
4. Select the ports to be members of the LAG.
5. Click **Apply** to update the device.

6. Click **CURRENT MEMBERS**. The Current Members window opens and displays the member ports included in the LAG:

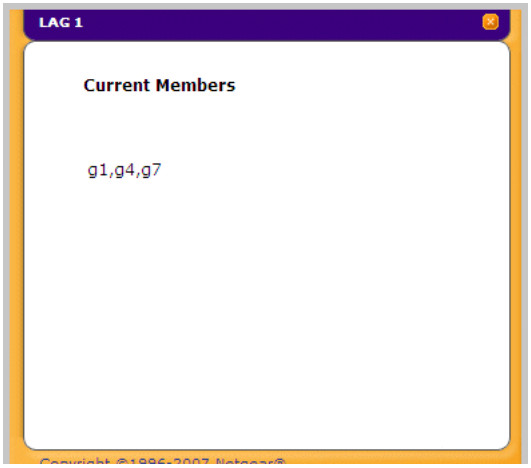


Figure 4-4

Advanced

The LAG **Advanced** menu contains the following options:

- "LAG Configuration"
- "LAG Membership"
- "LACP Configuration"
- "LACP Port Configuration"

LAG Configuration

The Advanced LAG Configuration screen contains fields for configuring LAG parameters. The system supports 8 LAGs, and each LAG can contain up to 8 ports.

To define LAG parameters:

1. Click **Switching > LAG > Advanced > LAG Configuration**. The Advanced LAG Configuration screen displays:

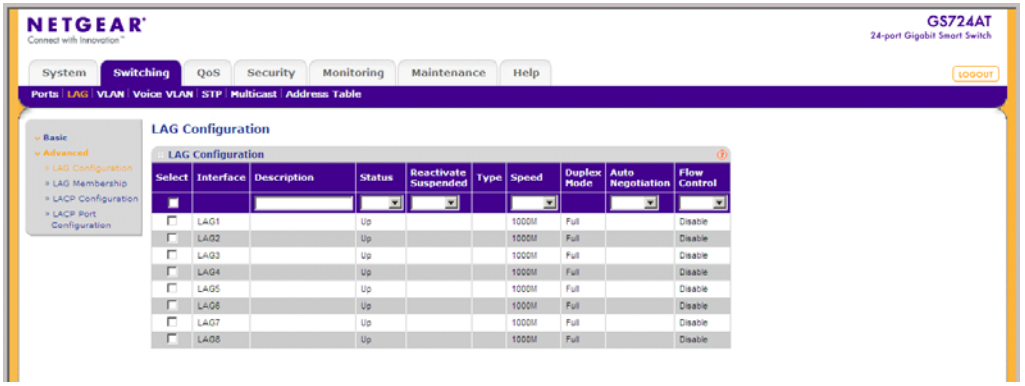


Figure 4-5

The Advanced LAG Configuration screen contains the following fields:

- **Interface** – Displays the LAG number.
- **Description** – Enter a user-defined LAG description.
- **Status** – Select the current link operation. The possible field values are:
  - Up – The LAG is currently linked and forwarding traffic.
  - Down – The LAG is currently not linked.
- **Reactivate Suspended** – Select the action to apply to a suspended LAG. The possible field values are:
  - Enable – Reactivate the suspended LAG.
  - Disable – Do not reactivate the suspended LAG.
- **Type** – Displays the LAG Type. The possible field values are:
  - Static – The LAG is configured manually.
  - LACP – The LAG is configured automatically.
- **Speed** – Select the data transmission rate for the LAG. The LAG type determines what speed setting options are available. LAG speeds can only be configured when auto negotiation is disabled. The possible field values are:

  - 10M – The LAG is currently operating at 10 Mbps.
  - 100M – The LAG is currently operating at 100 Mbps.
  - 1000M – The LAG is currently operating at 1000 Mbps.
- **Duplex Mode** – Displays the duplex mode of the LAG. The possible field value is:
  - Full – The interface supports transmission between the device and its link partner in both directions simultaneously.
- **Auto Negotiation** – Select the auto negotiation status of the LAG. Auto Negotiation is a protocol between two link partners that enables a port to advertise its transmission rate, duplex mode, and flow control abilities to its partner. Auto Negotiation is *enabled* by default. The possible field values are:
  - Enable – Enable auto negotiation.
  - Disable – Disable auto negotiation.
- **Flow Control** – Select the flow control status of the LAG. Operates when the port is in full duplex mode. Flow Control is disabled by default. The possible field values are:
  - Enable – Enable flow control.
  - Disable – Disable flow control.

2. Select the interface.

3. Enter or modify the fields in the first row.

4. Click **Apply** to update the device.

LAG Membership

The Advanced LAG Membership screen allows network managers to assign ports to LAGs.

To assign ports to LAGs:

1. Click **Switching > LAG > Advanced > LAG Membership**. The Advanced LAG Membership screen displays:

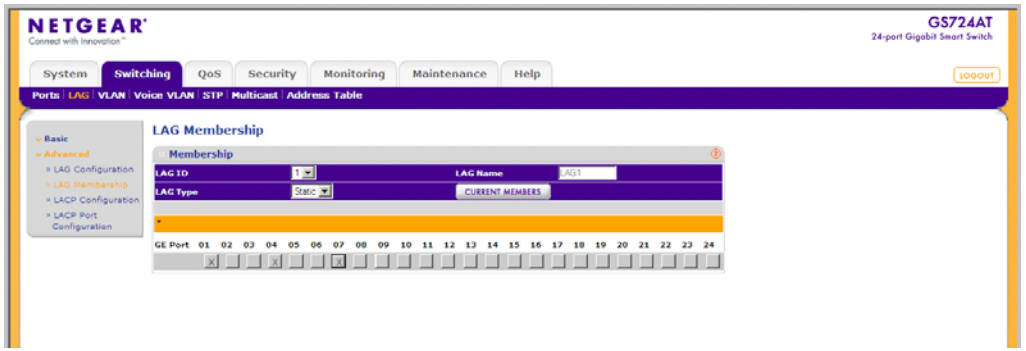


Figure 4-6

The Advanced LAG Membership screen contains the following fields:

- **LAG ID** – Select the LAG ID.
- **LAG Name** – Displays the user-defined LAG name.
- **LAG Type** – Select the LAG type. The possible field values are:
  - Static – The LAG is configured manually.
  - LACP – The LAG is configured automatically.

2. Select the **LAG ID** and **LAG Type**.
3. Click on the gold button. The port panel displays.
4. Select the ports to be members of the LAG.
5. Click **Apply** to update the device.

6. Click **CURRENT MEMBERS**. The Current Members window opens and displays the member ports included in the LAG:

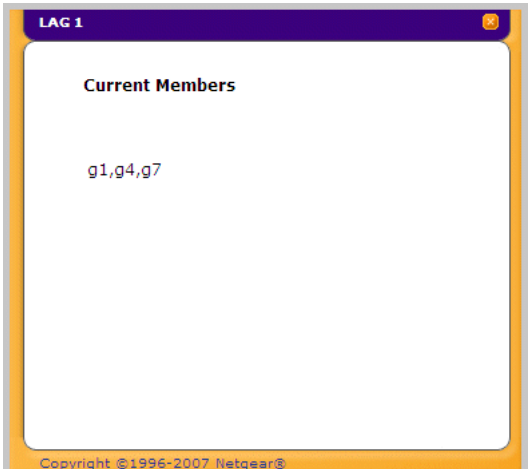


Figure 4-7

LACP Configuration

Aggregated links can be set up manually or automatically established by enabling LACP on the relevant links. Aggregated ports can be linked into link-aggregation port-groups. Each group is comprised of ports with the same speed. The LACP Configuration screen contains fields for configuring LACP.

To configure LACP:

1. Click **Switching** > **LAG** > **Advanced** > **LACP Configuration**. The LACP Configuration screen displays:

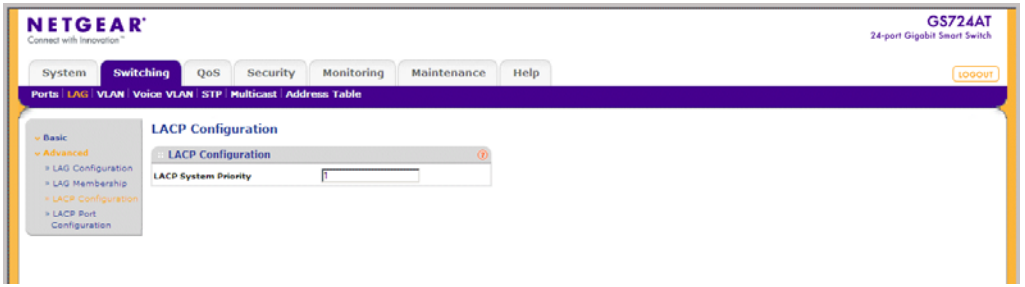


Figure 4-8

The LACP Configuration screen contains the following field:

- **LACP System Priority** – Enter the system priority value. The field range is 1-65535. The field default is 1.

2. Enter the **LACP System Priority** in the provided field.
3. Click **Apply** to update the device.

LACP Port Configuration

To configure LACP port priority:

1. Click **Switching** > **LAG** > **Advanced** > **LACP Port Configuration**. The LACP Port Configuration screen displays:

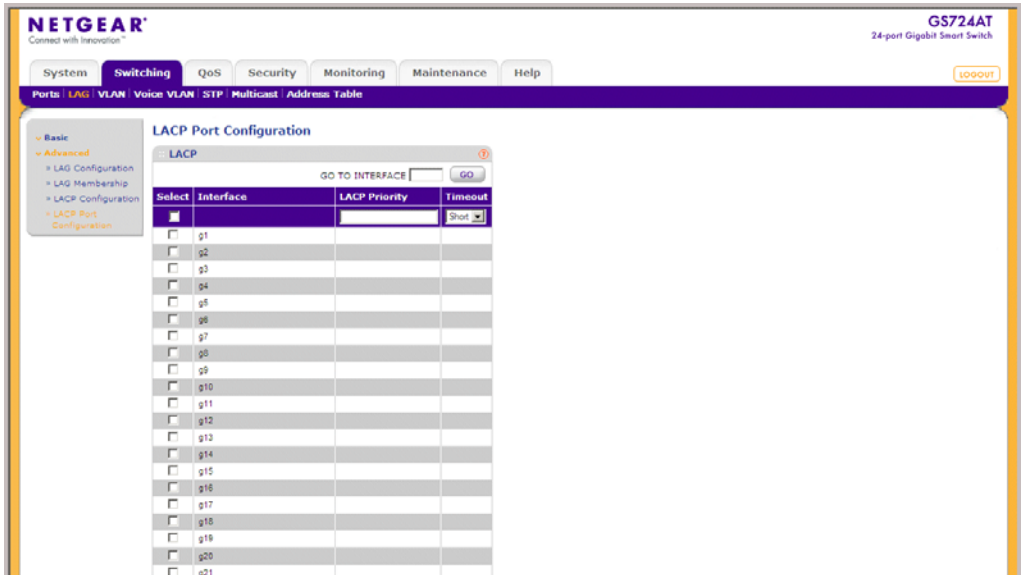


Figure 4-9

The LACP Port Configuration screen contains the following fields:

- **Interface** – Displays the interface number to which timeout and priority values are assigned.
- **LACP Priority** – Enter the port priority value. The field range is 1-65535.
- **Timeout** – Select the administrative LACP timeout. The possible field values are:
  - Long – A long timeout value (90 seconds). This is the default.

– Short – A short timeout value (3 seconds).

2. Select the interface.
3. Enter the **LACP Priority** and select the **Timeout** in the provided fields in the first row.
4. Click **Apply** to update the device.

VLAN

VLANs are logical subgroups with a Local Area Network (LAN) which combine user stations and network devices into a single unit, regardless of the physical LAN segment to which they are attached. VLANs allow network traffic to flow more efficiently within subgroups. VLANs use software to reduce the amount of time it takes for network changes, additions, and moves to be implemented.

VLANs have no minimum number of ports, and can be created per unit, per device, or through any other logical connection combination, since they are software-based and not defined by physical attributes.

VLANs function at Layer 2. Since VLANs isolate traffic within the LAN, a Layer 3 router working at a protocol level is required to allow traffic flow between VLANs. Layer 3 routers identify segments and coordinate with VLANs. VLANs are Broadcast and Multicast domains. Broadcast and Multicast traffic is transmitted only in the VLAN in which the traffic is generated.

VLAN tagging provides a method of transferring VLAN information between VLAN groups. VLAN tagging attaches a 4-byte tag to packet headers. The VLAN tag indicates to which VLAN the packets belong. VLAN tags are attached to the VLAN by either the end station or the network device. VLAN tags also contain VLAN network priority information.

The **VLAN** menu contains the following options:

- "Basic"
- "Advanced"

Basic

The VLAN **Basic** menu contains the following options:

- "VLAN Configuration"

VLAN Configuration

The Basic VLAN Configuration screen provides information and parameters for configuring and working with VLANs. The maximum number of active VLANs is 128.

To define VLAN properties:

1. Click **Switching > VLAN > Basic > VLAN Configuration**. The Basic VLAN Configuration screen displays:

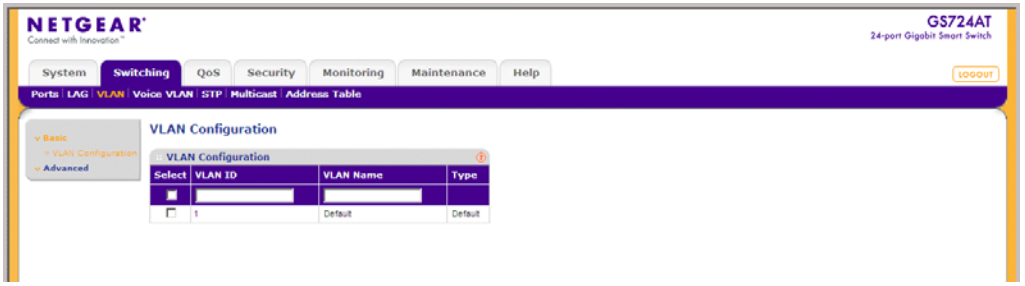


Figure 4-10

The Basic VLAN Configuration screen contains the following fields:

- **VLAN ID** – Enter the VLAN ID. The field range is 2-4093.
- **VLAN Name** – Enter the user-defined VLAN name.
- **Type** – Displays the VLAN type. The possible field values are:
  - Static – The VLAN is user-defined.
  - Default – The default VLAN ID is 1. It cannot be modified by the user.

2. Select the VLAN entry.
3. Enter the **VLAN ID** and **VLAN Name** in the provided fields in the first row.
4. Click **Apply** to update the device.

To add a new VLAN:

1. Click **Switching > VLAN > Basic > VLAN Configuration**. The Basic VLAN Configuration screen displays.
2. Enter the **VLAN ID** and **VLAN Name** in the provided fields in the first row.
3. Click **Add** to update the device.

To remove a VLAN:

1. Click **Switching** > **VLAN** > **Basic** > **VLAN Configuration**. The Basic VLAN Configuration screen displays.
2. Select the VLAN entry.
3. Click **Delete** to remove the entry.

Advanced

The VLAN **Advanced** menu contains the following options:

- "VLAN Configuration"
- "VLAN Membership"
- "Port PVID Configuration"

VLAN Configuration

The Advanced VLAN Configuration screen provides information and parameters for configuring and working with VLANs. The maximum number of active VLANs is 128.

To define VLAN properties:

1. Click **Switching** > **VLAN** > **Advanced** > **VLAN Configuration**. The Advanced VLAN Configuration screen displays:

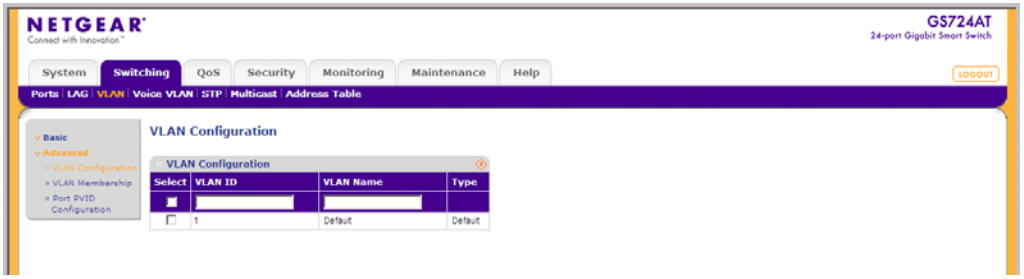


Figure 4-11

The Advanced VLAN Configuration screen contains the following fields:

- **VLAN ID** – Enter the VLAN ID. The field range is 2-4093.
- **VLAN Name** – Enter the user-defined VLAN name.
- **Type** – Displays the VLAN type. The possible field values are:

- Static – The VLAN is user-defined.
- Default – The VLAN is the default VLAN. The default VLAN is enabled by default.

2. Select the VLAN entry.
3. Enter the **VLAN ID** and **VLAN Name** in the provided fields in the first row.
4. Click **Apply** to update the device.

To add a new VLAN:

1. Click **Switching** > **VLAN** > **Advanced** > **VLAN Configuration**. The Advanced VLAN Configuration screen displays.
2. Enter the **VLAN ID** and **VLAN Name** in the provided fields in the first row.
3. Click **Add** to update the device.

To remove a VLAN:

1. Click **Switching** > **VLAN** > **Advanced** > **VLAN Configuration**. The Advanced VLAN Configuration screen displays.
2. Select the VLAN entry.
3. Click **Delete** to remove the entry.

VLAN Membership

The VLAN Membership screen contains a table that maps ports to VLANs. Ports are assigned VLAN membership by toggling through the Port Control settings.

To define VLAN group membership:

1. Click **Switching** > **VLAN** > **Advanced** > **VLAN Membership**. The VLAN Membership screen displays:

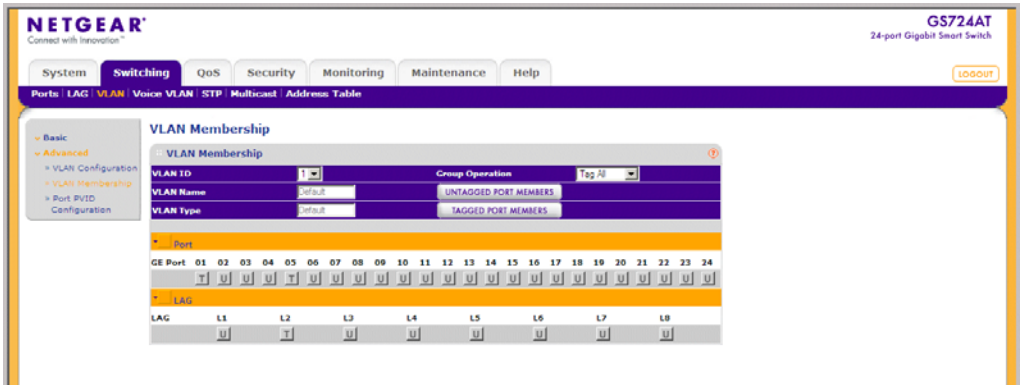


Figure 4-12

The VLAN Membership screen contains the following fields:

- **VLAN ID** – Select the VLAN ID to be displayed and configured. VLAN ID = 1 cannot be modified.
- **VLAN Name** – Displays the name of the VLAN.
- **VLAN Type** – Displays the VLAN type. The possible field values are:
  - Static – The VLAN is user-defined.
  - Default – The VLAN is the default VLAN. The default VLAN is enabled.
- **Group Operation** – Select the VLAN membership for all ports and LAGs. The possible field values are:
  - Tag All – Defines all selected interfaces as tagged VLAN members. Packets belonging to the respective VLAN are tagged. The packets contain VLAN information.
  - Untag All – Defines all selected interfaces as untagged VLAN members. Packets belonging to the respective VLAN are untagged.
  - Remove All – Remove all the interfaces participating in the VLAN.

2. Select the **VLAN ID** from the list in the provided field.
3. Select the **Group Operation** from the list in the provided field.

4. Click **Apply** to update the device.

To tag or untag selected ports or LAGs:

1. Click **Switching** > **VLAN** > **Advanced** > **VLAN Membership**. The VLAN Membership screen displays.
2. Click a gold button to display the ports or LAGs.
3. Click the boxes below the selected ports or LAGs to mark them as tagged (**T**) or untagged (**U**).
4. Click **Apply** to update the device.

To tag or untag all the ports or all the LAGs:

1. Click **Switching** > **VLAN** > **Advanced** > **VLAN Membership**. The VLAN Membership screen displays.
2. Click the quick box or the LAG quick box, repeatedly if necessary, until a **T** or **U** appears in the quick box, marking all the ports or LAGs as tagged or untagged, respectively.
3. Click **Apply** to update the device.

To view VLAN tagged port members:

1. Click **Switching** > **VLAN** > **Advanced** > **VLAN Membership**. The VLAN Membership screen displays.
2. Click **TAGGED PORT MEMBERS**. The VLAN Tagged Ports window opens:

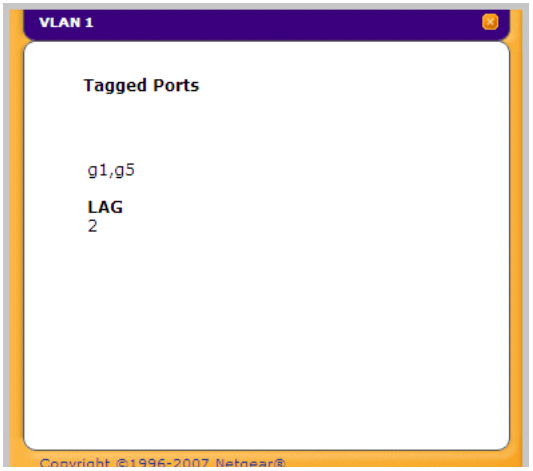


Figure 4-13

To view VLAN untagged port members:

1. Click **Switching** > **VLAN** > **Advanced** > **VLAN Membership**. The VLAN Membership screen displays.
2. Click **UNTAGGED PORT MEMBERS**. The VLAN Untagged Ports screen opens:

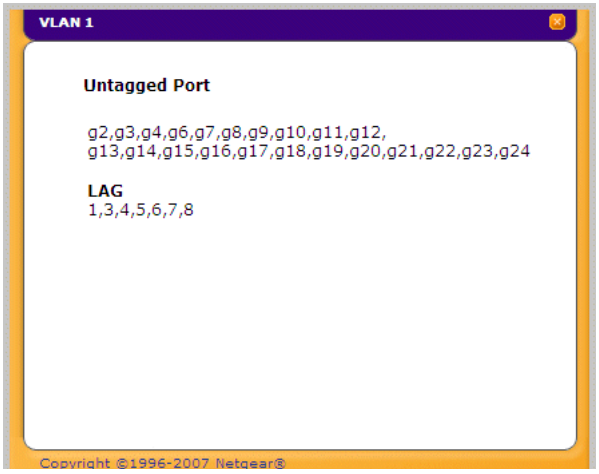


Figure 4-14

Port PVID Configuration

The Port PVID Configuration screen contains parameters for assigning Port VLAN ID (PVID) values to interfaces. All ports must have a defined PVID. If no other value is configured the default VLAN PVID is used. VLAN ID 1 belongs to the default VLAN which cannot be deleted from the system. Once the PVID is changed from 1 to another VLAN ID on an interface, the default VLAN on that interface is automatically removed.

To configure Port PVID parameters:

1. Click **Switching > VLAN > Advanced > Port PVID Configuration**. The Port PVID Configuration screen displays:

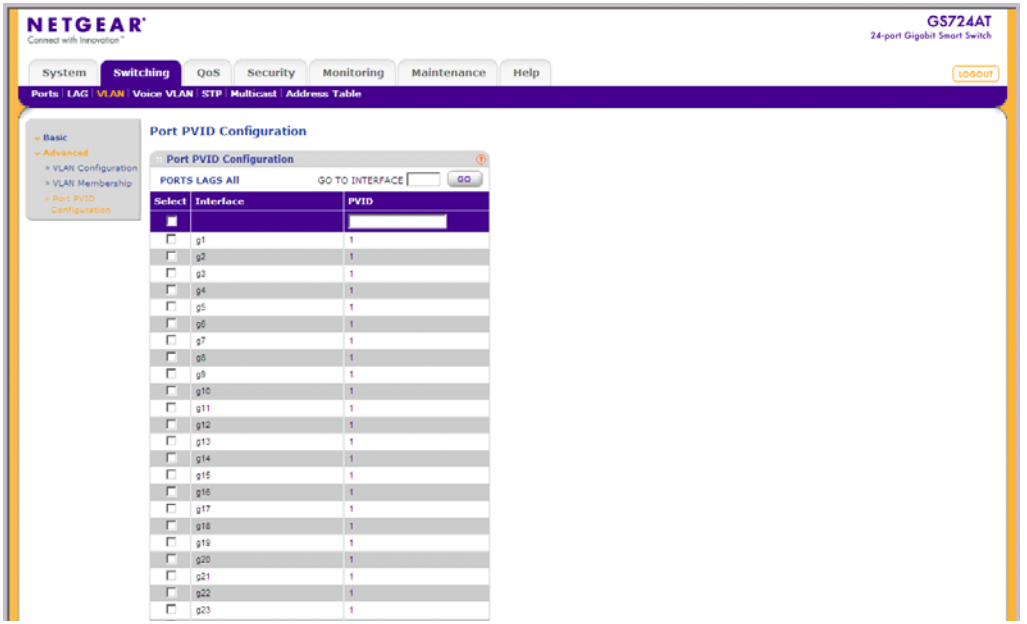


Figure 4-15

The Port PVID Configuration screen contains the following fields:

- **Interface** – Displays the interface id (port number or LAG number) to which the PVID tag is assigned.
- **PVID** – Enter the PVID value. The possible field range is 1-4093.

2. Select an interface.
3. Enter the **PVID** in the provided field in the first row.
4. Click **Apply** to update the device.

Voice VLAN

Voice VLAN allows you to enhance VoIP service by configuring ports to carry IP voice traffic from IP phones on a specific VLAN. VoIP traffic has a preconfigured OUI prefix in the source MAC address.

You can configure VLANs on which voice IP traffic is forwarded. Non-VoIP traffic is dropped from the Voice VLAN in auto Voice VLAN secure mode. Voice VLAN also provides QoS to VoIP, ensuring that the quality of voice does not deteriorate if the IP traffic is received unevenly. The system supports one Voice VLAN.

There are two operational modes for IP Phones:

- IP phones are configured with VLAN-mode as enabled, ensuring that tagged packets are used for all communications.
- If the IP phone VLAN-mode is disabled, the phone uses untagged packets. The phone uses untagged packets while retrieving the initial IP address through DHCP. The phone eventually uses the Voice VLAN and starts sending tagged packets.

The Voice **VLAN** menu contains the following options:

- "Basic"
- "Advanced"

Basic

The Voice VLAN **Basic** menu contains the following options:

- "Properties"

Properties

The Voice VLAN Basic Properties screen contains information about Voice VLAN on the device, including the ports enabled and included in the Voice VLAN.

To define Voice VLAN settings:

1. Click **Switching** > **Voice VLAN** > **Basic** > **Properties**. The Voice VLAN Basic Properties screen displays:

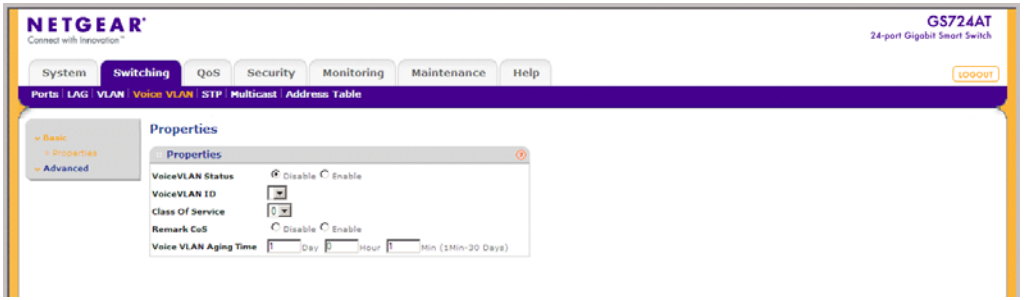


Figure 4-16

The Voice VLAN Basic Properties screen contains the following fields:

- **Voice VLAN Status** – Select the Voice VLAN status on the device. The possible field values are:
  - Enable – Enable Voice VLAN on the device.
  - Disable – Disable Voice VLAN on the device. This is the default value.
- **VoiceVLAN ID** – Select the Voice VLAN ID number.
- **Class of Service** – Select the CoS tag to add to untagged packets received on the voice VLAN. The possible field values are 0-7, where zero is the lowest priority, and seven is the highest priority.
- **Remark CoS** – Enable or disable reassigning the CoS tag value to packets received on the voice VLAN. The possible field values are:
  - Disable – Disable remarking the packet CoS tag value. This is the default value.
  - Enable – Enable remarking the packet CoS tag value.
- **Voice VLAN Aging Time** – Enter the Voice VLAN aging time. The Voice VLAN aging time sets the maximum inactivity time for a Voice VLAN port member after its MAC address is aged out. If the time since the last MAC address with telephony MAC address was aged out exceeds the Voice VLAN aging time, the port is dropped from the voice VLAN. The default time is one day. The field format is Day, Hour, Minute. The aging time starts after the MAC Address is aged out from the Dynamic MAC Address table. The default time is 300 sec. For more information on defining MAC address age out time, see "Dynamic Addresses".

2. Select the device **VoiceVLAN Status** in the provided field.
3. If you selected Enable in the **VoiceVLAN Status** field, select the **VoiceVLAN ID**, **Class of Service**, **Remark CoS** and enter the **Voice VLAN Aging Time** in the provided fields.
4. Click **Apply** to update the device.

Advanced

The Voice VLAN **Advanced** menu contains the following options:

- "Properties"
- "Port Setting"
- "OUI"

Properties

The Voice VLAN Advanced Properties screen contains information about Voice VLAN on the device, including the ports enabled and included in the Voice VLAN.

To define Voice VLAN settings:

1. Click **Switching > Voice VLAN > Advanced > Properties**. The Voice VLAN Advanced Properties screen displays:

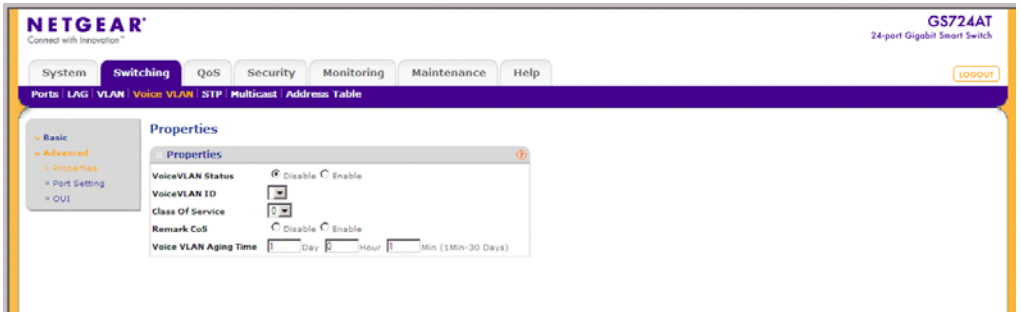


Figure 4-17

The Voice VLAN Advanced Properties screen contains the following fields:

- **VoiceVLAN Status** – Select the Voice VLAN status on the device. The possible field values are:
  - Enable – Enable Voice VLAN on the device.
  - Disable – Disable Voice VLAN on the device. This is the default value.

- **VoiceVLAN ID** – Select the Voice VLAN ID number.
- **Class of Service** – Select a CoS tag to add to untagged packets received on the voice VLAN. The possible field values are 0-7, where zero is the lowest priority, and seven is the highest priority.
- **Remark CoS** – Enable or disable reassigning the CoS tag value to packets received on the voice VLAN. The possible field values are:
  - Disable – Disable remarking the packet CoS tag value. This is the default value.
  - Enable – Enable remarking the packet CoS tag value.
- **Voice VLAN Aging Time** – Enter the Voice VLAN aging time. The Voice VLAN aging time sets the maximum inactivity time for a Voice VLAN port member after its MAC address is aged out. If the time since the last MAC address with telephony MAC address was aged out exceeds the Voice VLAN aging time, the port is dropped from the voice VLAN. The default time is one day. The field format is Day, Hour, Minute. The aging time starts after the MAC Address is aged out from the Dynamic MAC Address table. The default time is 300 sec. For more information on defining MAC address age out time, see "Dynamic Addresses".

2. Select the device **VoiceVLAN Status** in the provided field.
3. If you selected Enable in the **VoiceVLAN Status** field, select the **VoiceVLAN ID**, **Class of Service**, **Remark CoS** and enter the **Voice VLAN Aging Time** in the provided fields.
4. Click **Apply** to update the device.

Port Setting

The Voice VLAN Port Setting screen allows network managers to add ports or LAGs to the voice VLAN.

To add ports or LAGs to the Voice VLAN:

1. Click **Switching** > **Voice VLAN** > **Advanced** > **Port Setting**. The Port Setting screen opens:

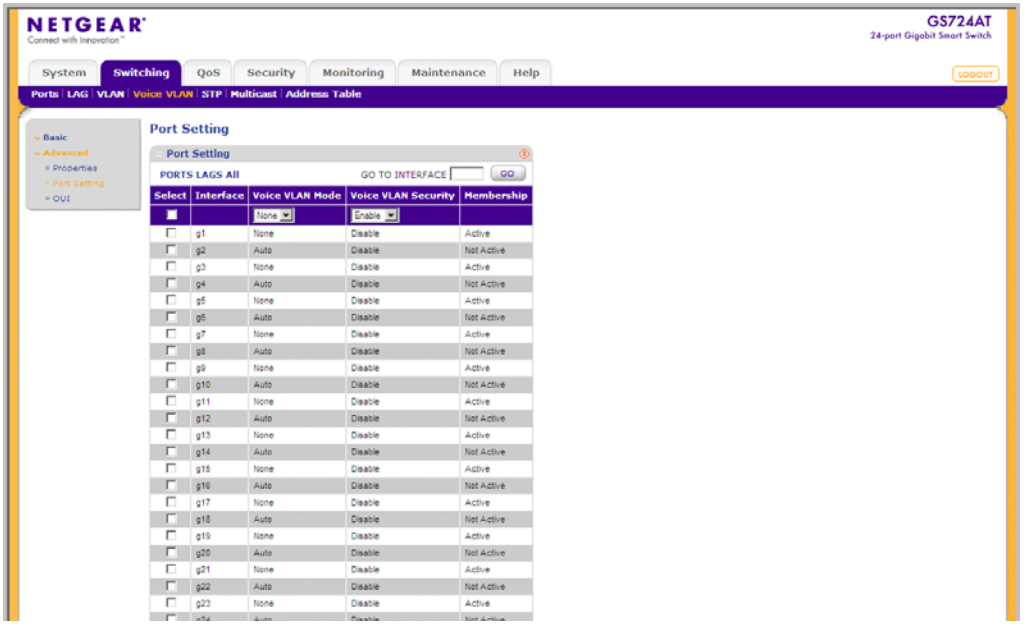


Figure 4-18

The Voice VLAN Port Setting screen contains the following fields:

- **Interface** – Displays the interface for which the Voice VLAN settings are applied.
- **Voice VLAN Mode** – Select the Voice VLAN mode. The possible field values are:
  - None – Maintain the current Voice VLAN port/LAG settings. This is the default value.
  - Auto – Enable the port/LAG to join the Voice VLAN if traffic with an IP Phone MAC Address is transmitted on the port/LAG. The port/LAG is aged out of the voice VLAN if the IP phone's MAC address (with an OUI prefix) is aged out and exceeds the defined aging time. If the MAC Address of the IP phones OUI was added manually to a port/LAG in the Voice VLAN, the user cannot add it to the Voice VLAN in Auto mode, only in Manual mode.
- **Voice VLAN Security** – Select the port/LAG security mode on the Voice VLAN. Port Security ensures that packets arriving with an unrecognized OUI are dropped.
  - Enable – Enable port/LAG security on the Voice VLAN.

  - Disable – Disable port/LAG security on the Voice VLAN. This is the default value.
- **Membership** – Displays the Voice VLAN member status. The possible field values are:
  - Active – Indicates the Voice VLAN membership is active for the interface.
  - Not Active – Indicates the Voice VLAN membership is not active for the interface.

2. Select the interface.
3. Select the **Voice VLAN Mode**, **Voice VLAN Security** and **Membership** in the provided fields in the first row.
4. Click **Apply** to update the device.

OUI

The OUI screen lists the Organizationally Unique Identifiers (OUIs) associated with the Voice VLAN. The first three bytes of the MAC Address contain a manufacturer identifier, while the last three bytes contain a unique station ID. Using the OUI, you can add specific manufacturer's MAC addresses to the OUI table. Once the OUIs are added, all traffic received on the Voice VLAN ports from the specific IP phone with a listed OUI is forwarded on the voice VLAN.

To define OUIs:

1. Click **Switching > Voice VLAN > Advanced > OUI**. The Voice VLAN OUI screen displays:

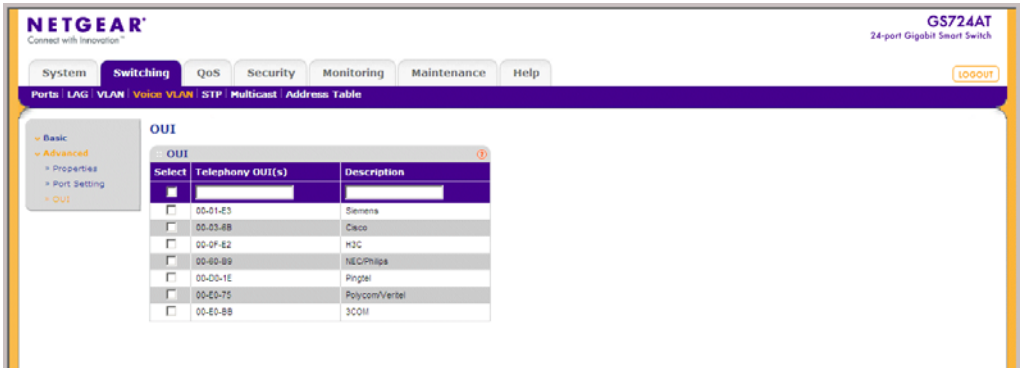


Figure 4-19

The Voice VLAN OUI screen contains the following fields:

- **Telephony OUI(s)** – Enter the OUI to enable on the Voice VLAN. The following OUIs are enabled by default.
  - 00-01-E3 – Assigned to Siemens IP Phones.

  - 00-03-6B – Assigned to Cisco IP Phones.
  - 00-0F-E2 – Assigned to H3C IP Phones.
  - 00-60-B9 – Assigned to NEC/Philips IP Phones.
  - 00-D0-1E – Assigned to Pingtel IP Phones.
  - 00-E0-75 – Assigned to Polycom/Veritel IP Phones.
  - 00-E0-BB – Assigned to 3COM IP Phones.
- **Description** – Enter an OUI description up to 32 characters.

2. Select the OUI entry.
3. Enter the **Telephony OUI(s)** and **Description** in the provided fields in the first row.
4. Click **Apply** to update the device.

To add a new Voice VLAN OUI:

1. Click **Switching** > **Voice VLAN** > **Advanced** > **OUI**. The Voice VLAN OUI screen displays.
2. Enter the **Telephony OUI(s)** and **Description** in the provided fields in the first row.
3. Click **Add** to update the device.

To remove a Voice VLAN OUI:

1. Click **Switching** > **Voice VLAN** > **Advanced** > **OUI**. The Voice VLAN OUI screen displays.
2. Select the OUI entry.
3. Click **Delete** to remove the entry.

To restore Voice VLAN OUI factory defaults:

1. Click **Switching** > **Voice VLAN** > **Advanced** > **OUI**. The Voice VLAN OUI screen displays.
2. Click **Restore Defaults** to restore the factory defaults.

STP

Spanning Tree Protocol (STP) provides network topology for any arrangement of bridges. STP also provides a single path between end stations on a network, eliminating loops. Loops occur when alternate routes exist between hosts. Loops in an extended network can cause bridges to forward traffic indefinitely, resulting in increased traffic and reducing network efficiency.

The **STP** menu contains the following options:

- "Basic"
- "Advanced"

Basic

The STP **Basic** menu contains the following options:

- "STP Configuration"

STP Configuration

The Basic STP Configuration screen contains parameters for configuring STP on the device.

To configure STP on the device:

1. Click **Switching > STP > Basic > STP Configuration**. The Basic STP Configuration screen displays:

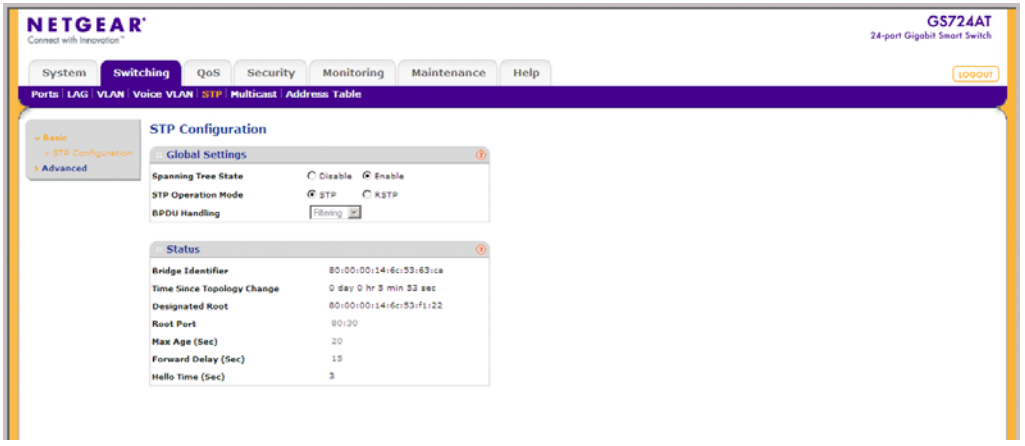


Figure 4-20

The Basic STP Configuration screen contains the following fields:

Global Settings

- **Spanning Tree State** – Select the STP state on the device. The possible field values are:
  - Enable – Enable STP on the device.
  - Disable – Disable STP on the device.

- **STP Operation Mode** – Select the STP mode on the device. The possible field values are:
  - STP – Enable classic STP on the device.
  - RSTP – Enable Rapid Spanning Tree Protocol (RSTP) on the device.
- **BPDU Handling** – Select the method of handling STP BPDUs (Bridge Protocol Data Units) when STP is disabled on the device or interface. The possible field values are:
  - Filtering – BPDUs are filtered. This the default.
  - Flooding – BPDUs are flooded to all ports in the system.
  - Bridging – BPDUs are bridged to all ports in the VLAN.

Status

- **Bridge Identifier** – Displays the Bridge priority and MAC address.
- **Time Since Topology Change** – Displays the amount of time that has elapsed since the bridge was initialized or reset or the last topology change that occurred. The time is displayed in a day-hour-minute-second format, such as 2 days 5 hours 10 minutes and 4 seconds.
- **Designated Root** – Displays the Root Bridge priority and MAC address.
- **Root Port** – Displays the port number that offers the lowest cost path from this bridge to the Root Bridge. This field is significant when the bridge is not the Root Bridge.
- **Max Age (Sec)** – Displays the device Maximum Age Time. The Maximum Age Time is the amount of time in seconds a bridge waits before sending configuration messages. The default Maximum Age Time is 20 seconds.
- **Forward Delay (Sec)** – Displays the device Forward Delay Time. The Forward Delay Time is the amount of time in seconds a bridge remains in a listening and learning state before forwarding packets. The default is 15 seconds.
- **Hello Time (Sec)** – Displays the device Hello Time. The Hello Time indicates the amount of time in seconds a Root Bridge waits between configuration messages. The default is 2 seconds.

2. Select Enable or Disable in the **Spanning Tree State** provided field.
3. Select the **STP Operation Mode** in the provided field.
4. If you selected Disable in the **Spanning Tree State** field, select the **BPDU Handling** mode from the list in the provided field.
5. Click **Apply** to update the device.

Advanced

The STP **Advanced** menu contains the following options:

- "STP Configuration"
- "CST Configuration"
- "CST Port Configuration"
- "Rapid STP"

STP Configuration

The Advanced STP Configuration screen contains parameters for enabling STP on the device.

To configure STP on the device:

1. Click **Switching > STP > Advanced > STP Configuration**. The Advanced STP Configuration screen displays:

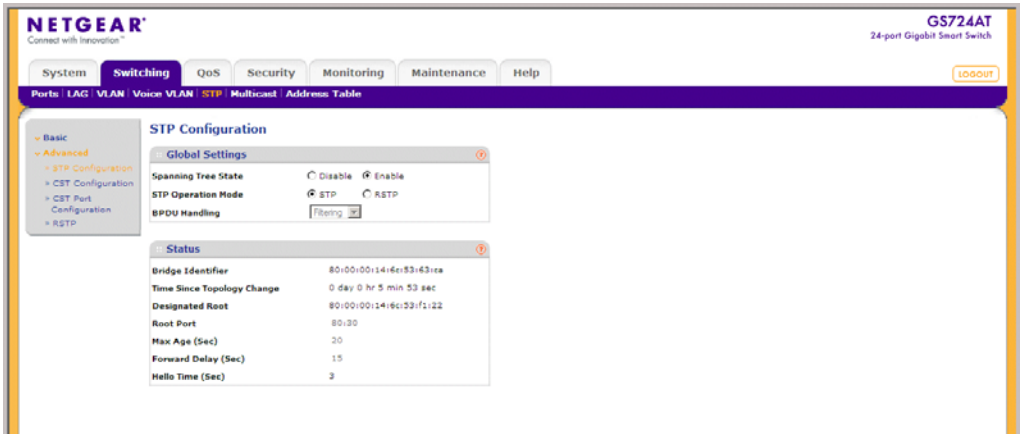


Figure 4-21

The Advanced STP Configuration screen contains the following fields:

Global Settings

- **Spanning Tree State** – Select the STP state on the device. The possible field values are:
  - Enable – Enable STP on the device.
  - Disable – Disable STP on the device.
- **STP Operation Mode** – Select the STP mode on the device. The possible field values are:

  - STP – Enable classic STP on the device.
  - RSTP – Enable Rapid Spanning Tree (RSTP) on the device.
- **BPDU Handling** – Select the method of handling STP BPDUs (Bridge Protocol Data Units) when STP is disabled on the device or interface. The possible field values are:
  - Filtering – BPDUs are filtered. This the default.
  - Flooding – BPDUs are flooded to all ports in the system.
  - Bridging – BPDUs are bridged to all ports in the VLAN.

Status

- **Bridge Identifier** – Displays the Bridge priority and MAC address.
- **Time Since Topology Change** – Displays the amount of time that has elapsed since the bridge was initialized or reset, and the last topographic change that occurred. The time is displayed in a day-hour-minute-second format, such as 2 days 5 hours 10 minutes and 4 seconds.
- **Designated Root** – Displays the Root Bridge priority and MAC address.
- **Root Port** – Indicates the port number that offers the lowest cost path from this bridge to the Root Bridge. This field is significant when the bridge is not the Root Bridge. The default is zero.
- **Max Age (Sec)** – Displays the device Maximum Age Time. The Maximum Age Time is the amount of time in seconds a bridge waits before sending configuration messages. The default Maximum Age Time is 20 seconds.
- **Forward Delay (Sec)** – Displays the device Forward Delay Time. The Forward Delay Time is the amount of time in seconds a bridge remains in a listening and learning state before forwarding packets. The default is 15 seconds.
- **Hello Time (Sec)** – Displays the device Hello Time. The Hello Time indicates the amount of time in seconds a Root Bridge waits between configuration messages. The default is 2 seconds.

2. Select Enable or Disable in the **Spanning Tree State** provided field.
3. Select the **STP Operation Mode** in the provided field.
4. If you selected Disable in the **Spanning Tree State** field, select the **BPDU Handling** mode from the list in the provided field.
5. Click **Apply** to update the device.

CST Configuration

The Common Spanning Tree (CST) describes the topology connecting STP/RSTP Bridges and MSTP regions.

To configure CST on the device:

1. Click **Switching > STP > Advanced > CST Configuration**. The CST Configuration screen displays:

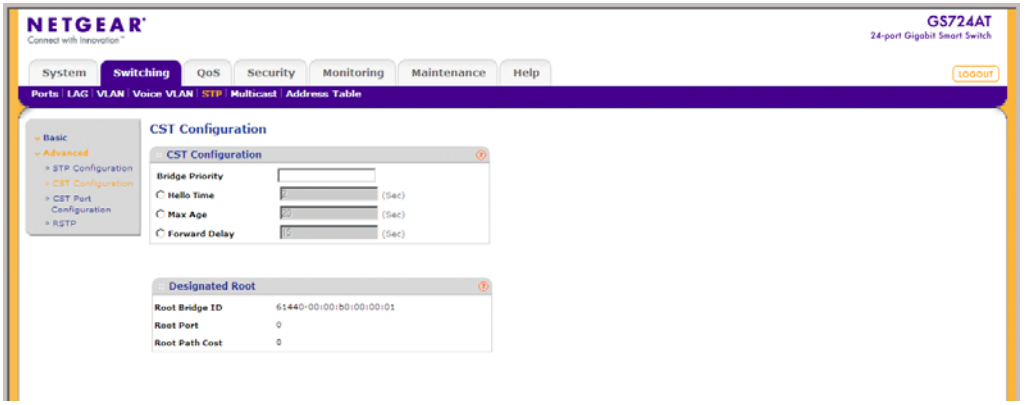


Figure 4-22

The CST Configuration screen contains the following fields:

CST Configuration

- **Bridge Priority** – Enter the bridge priority value. When switches or bridges are running STP, each is assigned a priority. After exchanging BPDUs, the device with the lowest priority value becomes the Root Bridge. The default value is 32768. The bridge priority value is provided in increments of 4096.
- **Hello Time** – Enter the device Hello Time. The Hello Time indicates the amount of time in seconds a Root Bridge waits between configuration messages. The default is 2 seconds.
- **Max Age** – Enter the device Maximum Age Time. The Maximum Age Time is the amount of time in seconds a bridge waits before sending configuration messages. The default Maximum Age Time is 20 seconds.
- **Forward Delay** – Enter the device Forward Delay Time. The Forward Delay Time is the amount of time in seconds a bridge remains in a listening and learning state before forwarding packets. The default is 15 seconds.

Designated Root

- **Root Bridge ID** – Displays the priority and MAC Address of the root bridge.
- **Root Port** – Displays the port number that offers the lowest cost path from this bridge to the Root Bridge. This field is significant when the bridge is not the Root Bridge. The current root port is zero when the device is not connected to the network.
- **Root Path Cost** – Displays the cost of the path from this bridge to the Root Bridge. The current root path cost is zero when the device is not connected to the network.

2. Enter the **Bridge Priority** in the provided field.
3. Select **Hello Time**, **Max Age** or **Forward Delay** and enter the value in the provided field.
4. Click **Apply** to update the device.

CST Port Configuration

To configure CST ports on the device:

1. Click **Switching > STP > Advanced > CST Port Configuration**. The CST Port Configuration screen displays:

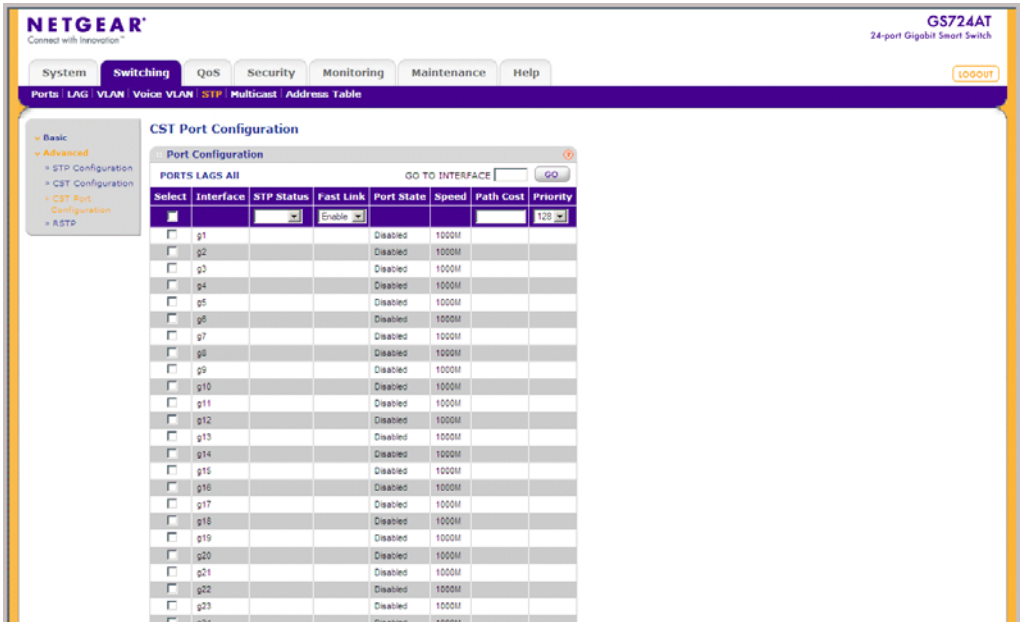


Figure 4-23

The CST Port Configuration screen contains the following fields:

- **Interface** – Displays the port or LAG for which the STP information is displayed.
- **STP Status** – Select the STP status on the interface. The possible field values are:
  - Enable – Enable STP on the interface.
  - Disable – Disable STP on the interface.
- **Fast Link** – Select the Fast Link state on the interface. If Fast Link mode is enabled for a interface, the Port State is automatically placed in the Forwarding state when the port link is up. Fast Link optimizes the STP protocol convergence. The possible field values are:
  - Enable – Enable Fast Link on the interface.
  - Disable – Disable Fast Link on the interface.
- **Port State** – Displays the current STP state of a port. If enabled, the port state determines what forwarding action is taken on traffic. Possible port states are:
  - Forwarding – STP is enabled on the port, and the port is forwarding packets based on the STP topology.
  - Disabled – STP is currently disabled on the port. The port forwards traffic while learning MAC addresses.
  - Blocking – The port is currently blocked and cannot forward traffic or learn MAC addresses.
  - Listening – The port is in Listening mode. The port cannot forward traffic nor can it learn MAC addresses.
  - Learning – The port is in Learning mode. The port cannot forward traffic, however it can learn new MAC addresses.
- **Speed** – Displays the speed at which the port is operating.
- **Path Cost** – Enter the method used to assign default path cost to STP ports. The possible field range is 1 - 200000000. The default path cost assigned to an interface varies according to the selected CST configuration method (Hello Time, Max Age or Forward Delay).
- **Priority** – Select the port priority value. When switches or ports are running STP, each is assigned a priority. After exchanging BPDUs, the device with the lowest priority value becomes the Root Port. The port priority has a range of 0-240 in increments of 16. The default value is 128.

2. Select the **STP Status** and **Fast Link** status in the provided fields.

3. Enter the **Path Cost** in the provided field.
4. Select the **Priority** from the list in the provided field.
5. Click **Apply** to update the device.

Rapid STP

While Classic STP prevents forwarding loops in a general network topology, convergence can take between 30-60 seconds. This time may delay detecting possible loops and propagating status topology changes. Rapid Spanning Tree Protocol (RSTP) detects and uses network topologies that allow a faster STP convergence without creating forwarding loops. The Global System LAG information displays the same field information as the ports, but represents the LAG RSTP information.

To define RSTP on the device:

1. Click **Switching** > **STP** > **Advanced** > **RSTP**. The Rapid STP screen displays:

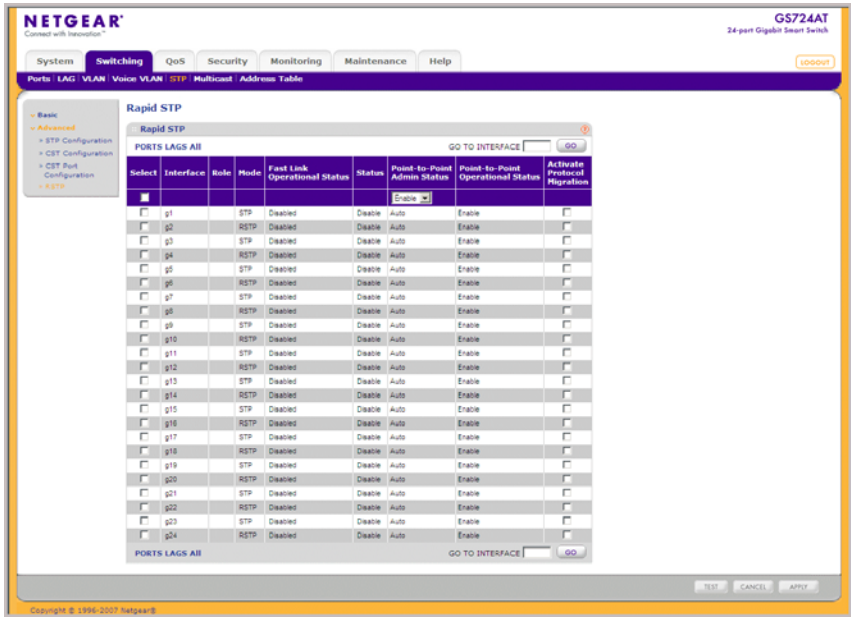


Figure 4-24

The Rapid STP screen contains the following fields:

- **Interface** – Displays the port or LAG on which Rapid STP is enabled.

- **Role** – Displays the port role assigned by the STP algorithm to provide to STP paths. The possible field values are:
  - Root – Provides the lowest cost path to forward packets to the root switch.
  - Designated – The port or LAG through which the designated switch is attached to the LAN.
  - Alternate – Provides an alternate path to the root switch from the root interface.
  - Backup – Provides a backup path to the designated port path toward the Spanning Tree leaves. Backup ports occur only when two ports are connected in a loop by a point-to-point link, or when a LAN has two or more connections connected to a shared segment.
  - Disabled – The port is not participating in the Spanning Tree.
- **Mode** – Displays the current STP mode. The STP mode is selected in the STP Configuration screen. The possible field values are:
  - STP – Classic STP is enabled on the device.
  - RSTP – Rapid STP is enabled on the device.
- **Fast Link Operational Status** – Displays the Fast Link status for the interface. If Fast Link is enabled for a port, the port is automatically placed in the forwarding state. The possible field values are:
  - Enabled – Fast Link is enabled on the interface.
  - Disabled – Fast Link is disabled on the interface.
- **Status** – Displays the RSTP status for the interface. The possible field values are:
  - Enabled – RSTP is enabled on the interface.
  - Disable – RSTP is disabled on the interface. This is the default value.
- **Point-to-Point Admin Status** – Select whether a point-to-point link is established, or if the device is permitted to establish a point-to-point link. The possible field values are:

  - Enable – Enable a point-to-point link, or configure to automatically establish a point-to-point link. To establish communications over a point-to-point link, the originating PPP first sends Link Control Protocol (LCP) packets to configure and test the data link. After a link is established and optional facilities are negotiated as needed by the LCP, the originating PPP sends Network Control Protocol (NCP) packets to select and configure one or more network layer protocols. When each of the chosen network layer protocols has been configured, packets from each network layer protocol can be sent over the link. The link remains configured for communications until explicit LCP or NCP packets close the link, or until some external event occurs. This is the actual switch port link type. It may differ from the administrative state.
  - Disable – Disable point-to-point link.
  - Auto – Enable the device to automatically establish a point-to-point link.
- **Point-to-Point Operational Status** – Displays the point-to-point operating state.
- **Activate Protocol Migration** – Activate sending Link Control Protocol (LCP) packets to configure and test that the data link is enabled.

2. Select the interface.
3. Select the **Point-to-Point Admin Status** from the list in the provided field in the first row.
4. To configure and test the data link, check **Activate Protocol Migration** in the provided field in the first row.
5. Click **Apply** to update the device.

Multicast

Multicast forwarding allows a single packet to be forwarded to multiple destinations. L2 Multicast service is based on L2 switch receiving a single packet addressed to a specific Multicast address. Multicast forwarding creates copies of the packet, and transmits the packets to the relevant ports.

- **Registered Multicast traffic** – If traffic addressed to a registered Multicast group is seen it is handled by an entry in the Multicast Filtering Database and forwarded only to the registered ports.
- **Unregistered Multicast traffic** – If traffic addressed to an unregistered Multicast group is seen it is handled by a special entry in the Multicast Filtering Database. The default setting of this is to flood all such traffic (traffic in unregistered Multicast groups).

Layer 2 switching forwards Multicast packets to all relevant VLAN ports by default, treating the packet as a Multicast transmission. Multicast traffic forwarding is functional. However, irrelevant ports also receive the Multicast, causing increased network traffic. Multicast forwarding filters enable forwarding of Layer 2 packets to port subsets, defined in the Multicast filter database.

The device supports forwarding L2 Multicast Packets. Multicast forwarding is enabled by default, and not configurable by user.

The **Multicast** menu contains the following options:

- "Basic"
- "Advanced"

Basic

The Multicast **Basic** menu contains the following options:

- "IGMP Snooping Configuration"

IGMP Snooping Configuration

When IGMP snooping is enabled, all IGMP packets are forwarded to the CPU. The CPU analyzes the incoming packets and determines which ports want to join which Multicast groups, which ports have Multicast routers generating IGMP queries, and what routing protocols are forwarding packets and Multicast traffic. A port requesting to join a specific Multicast group issues an IGMP report specifying that Multicast group. This results in the creation of the Multicast filtering database.

To configure Basic IGMP Snooping:

1. Click **Switching > Multicast > Basic > IGMP Snooping Configuration**. The Basic IGMP Snooping Configuration screen displays:

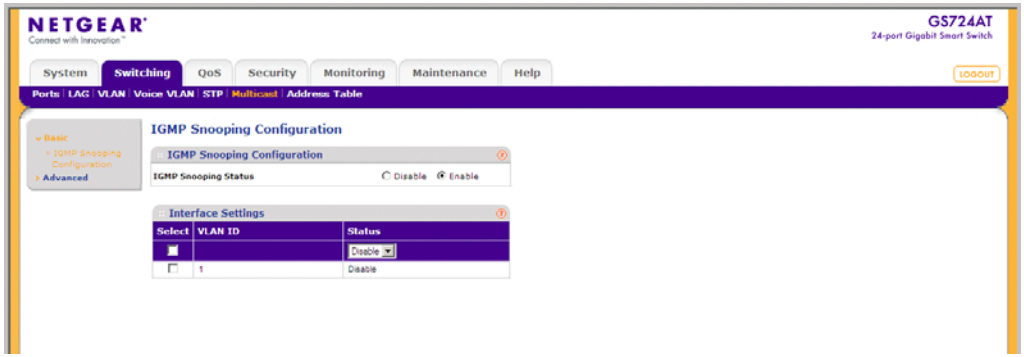


Figure 4-25

The Basic IGMP Snooping Configuration screen contains the following fields:

IGMP Snooping Configuration

- **IGMP Snooping Status** – Select the IGMP Snooping status on the device. The possible field values are:
  - Enable – Enable IGMP Snooping on the device.
  - Disable – Disable IGMP Snooping on the device.

Interface Settings

- **VLAN ID** – Displays the VLAN ID.
- **Status** – Select the IGMP Snooping status on the VLAN. The possible field values are:
  - Enable – Enable IGMP Snooping on the VLAN.
  - Disable – Disable IGMP Snooping on the VLAN.

2. Select the **IGMP Snooping Status** in the provided field.
3. Click **Apply** to update the device.

To configure IGMP Snooping on a VLAN:

1. Click **Switching > Multicast > Basic > IGMP Snooping Configuration**. The Basic IGMP Snooping Configuration screen displays.
2. Select the VLAN ID entry in the Interface Settings table.

3. Select the **Status** from the list in the provided field in the first row.
4. Click **Apply** to update the device.

Advanced

The Multicast **Advanced** menu contains the following options:

- "IGMP Snooping Configuration"
- "Multicast Group Configuration"
- "Multicast Group Membership"
- "Multicast Forward All"

IGMP Snooping Configuration

To configure Advanced IGMP Snooping:

1. Click **Switching > Multicast > Advanced > IGMP Snooping Configuration**. The Advanced IGMP Snooping Configuration screen displays:

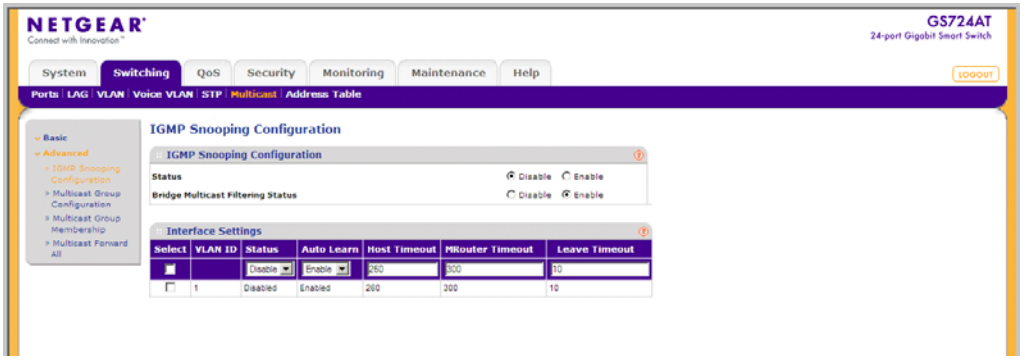


Figure 4-26

The Advanced IGMP Snooping Configuration screen contains the following fields:

IGMP Snooping Configuration

- **Status –** Select the IGMP Snooping status on the device. IGMP Snooping is operational if both the Status and Bridge Multicast Filtering fields are enabled. The possible field values are:
  - Enable – Enable IGMP Snooping on the device.
  - Disable – Disable IGMP Snooping on the device.

- **Bridge Multicast Filtering Status –** Select the bridge Multicast filtering status on the device. The possible field values are:
  - Enable – Enable Multicast filtering on the device.
  - Disable – Disable Multicast filtering on the device. If Multicast filtering is disabled, Multicast frames are flooded to all ports in the relevant VLAN. Disabled is the default value.

Interface Settings

- **VLAN ID** – Displays the VLAN ID.
- **Status** – Select the IGMP Snooping status on the VLAN. The possible field values are:
  - Enable – Enable IGMP Snooping on the VLAN.
  - Disable – Disable IGMP Snooping on the VLAN.
- **Auto Learn** – Select the Auto Learn status on the device. If Auto Learn is enabled, the devices automatically learns where other Multicast groups are located. The possible field values are:
  - Enable – Enable auto learn.
  - Disable – Disable auto learn.
- **Host Timeout** – Enter the amount of time in seconds the host waits to receive a message before timing out. The default value is 260 seconds.
- **MRouter Timeout** – Enter the amount of the time in seconds the Multicast router waits to receive a message before it times out. The default value is 300 seconds.
- **Leave Timeout** – Enter the amount of time in seconds the host waits, after requesting to leave the IGMP group and not receiving a Join message from another station, before timing out. If a Leave Timeout occurs, the switch notifies the Multicast device to stop sending traffic The field range is 0 - 2147483647. The default value is 10 seconds.

2. Select the IGMP Snooping **Status** and **Bridge Multicast Filtering Status** in the provided fields.
3. Click **Apply** to update the device.

To configure IGMP Snooping on a VLAN:

1. Click **Switching > Multicast > Advanced > IGMP Snooping Configuration**. The Advanced IGMP Snooping Configuration screen displays.
2. Select the VLAN ID entry in the Interface Settings table.

3. Select the **Status** and **Auto Learn** status from the lists in the provided fields in the first row.
4. Enter the **Host**, **MRouter** and **Leave Timeout**s in the provided fields in the first row.
5. Click **Apply** to update the device.

Multicast Group Configuration

The Multicast Group Configuration screen allows you to create, delete and modify Multicast service groups. The Multicast Group Configuration table can contain up to 32 Multicast service groups.

To configure Multicast groups:

1. Click **Switching > Multicast > Advanced > Multicast Group Configuration**. The Multicast Group Configuration screen displays:

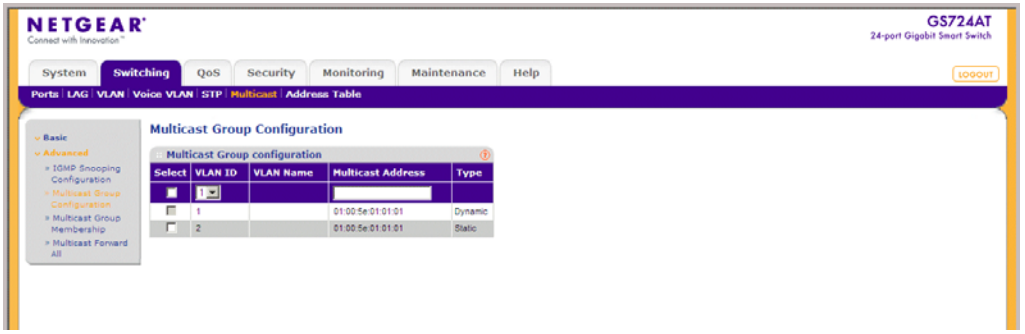


Figure 4-27

The Multicast Group Configuration screen contains the following information:

- **VLAN ID** – Displays the VLAN ID.
- **VLAN Name** – Displays the user-defined VLAN name.
- **Multicast Address** – Enter the Multicast group MAC Address associated with the VLAN.
- **Type** – Indicates the VLAN ID status in relation to the Multicast group.
  - Static – Attaches the VLAN ID to the Multicast group as static member.
  - Dynamic – Dynamically joins the VLAN ID to the Multicast group.

2. Select the group entry.
3. Enter the Multicast Address in the provided field in the first row.
4. Click **Apply** to update the device.

Multicast Group Membership

The Multicast Group Membership screen displays the ports and LAGs attached to the selected VLAN and the Multicast service group. The Port and LAG tables also reflect the manner in which the port or LAGs joined the Multicast group.

To configure Multicast group membership:

1. Click **Switching > Multicast > Advanced > Multicast Group Membership**. The Multicast Group Membership screen displays:

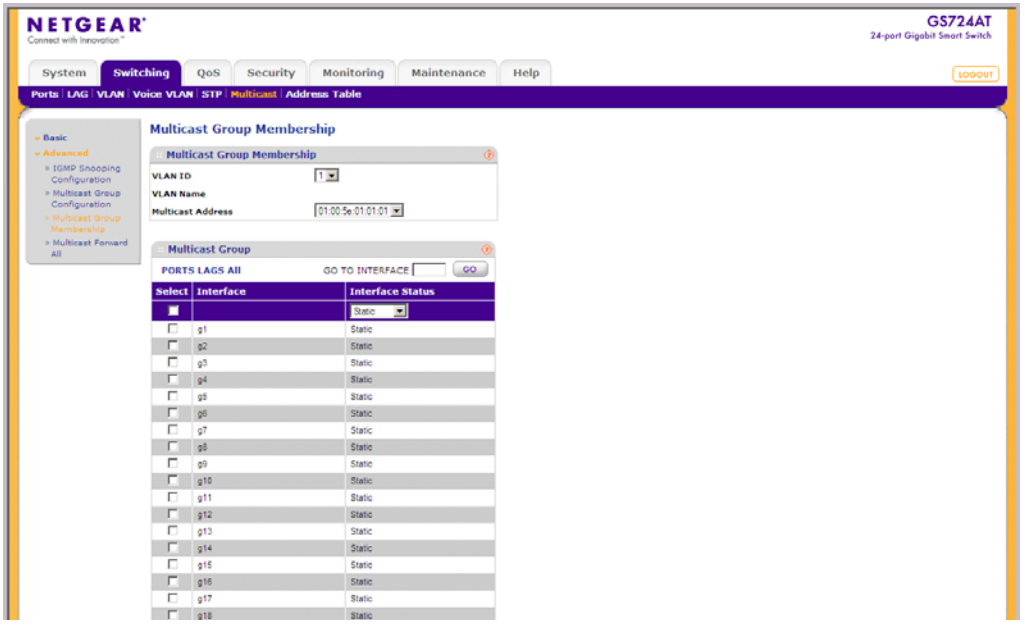


Figure 4-28

The Multicast Group Membership screen contains the following information:

Multicast Group Membership

- **VLAN ID** – Enter the VLAN ID.
- **VLAN Name** – Displays the user defined VLAN name.
- **Multicast Address** – Enter the Multicast group MAC address/IP address.

Multicast Group

- **Interface** – Displays the ports and LAGs for which the Multicast settings are displayed.

- **Interface Status** – Select the interface status. The possible field values are:
  - Static – The interface is joined to the Multicast group statically.
  - Forbidden – The interface is forbidden to join the Multicast group.
  - Excluded – The interface is not included in the Multicast group.

2. Select the **VLAN ID** from the list in the provided field.
3. Select the **Multicast Address** from the list in the provided field.
4. Select the interface entry in the Multicast Group table.
5. Select the **Interface Status** from the list in the provided field in the first row.
6. Click **Apply** to update the device.

Multicast Forward All

The Multicast Forward All screen contains fields for attaching ports or LAGs to a device that is attached to a neighboring Multicast router/switch. Once IGMP Snooping is enabled, Multicast packets are forwarded only to the appropriate port or VLAN.

To define Multicast forward all settings:

1. Click **Switching** > **Multicast** > **Advanced** > **Multicast Forward All**. The Multicast Forward All screen displays:

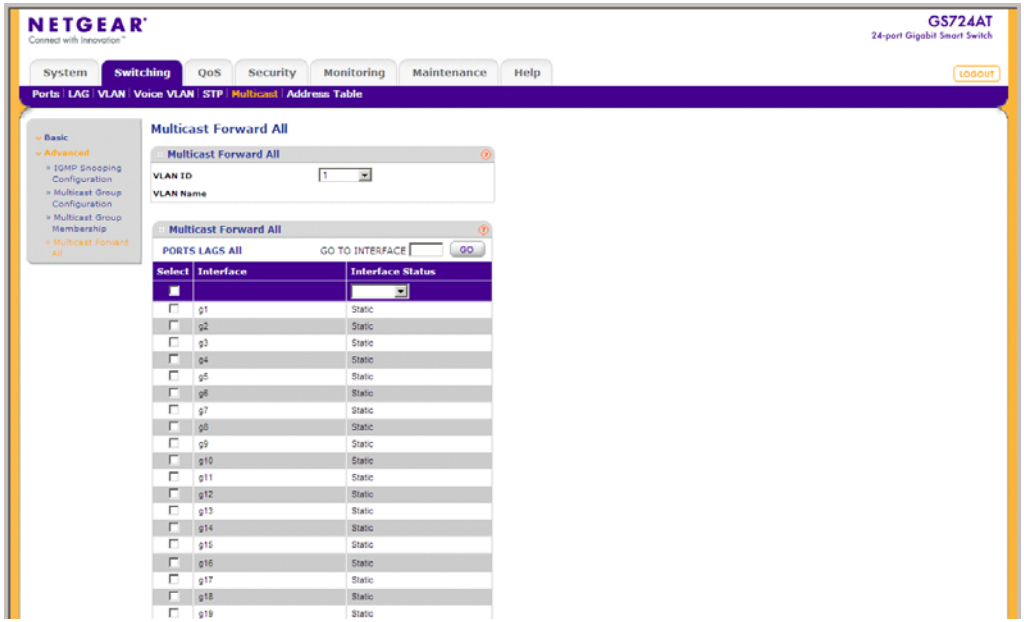


Figure 4-29

The Multicast Forward All screen contains the following information:

Multicast Forward All

- **VLAN ID** – Enter the VLAN ID.
- **VLAN Name** – Displays the user defined VLAN name.

Multicast Forward All

- **Interface** – Displays the interface for which the Multicast settings are displayed.
- **Interface Status** – Select the interface status. The possible field values are:
  - Static – The interface is added to the Multicast forward group statically.
  - Forbidden – The interface is forbidden to join the mulitcast group.
  - Excluded – The interface is not included in the Multicast group.

2. Select the **VLAN ID** from the list in the provided fields.

3. Select the port or LAG interface entry in the Multicast Group table.
4. Select the **Interface Status** from the list in the provided field in the first row.
5. Click **Apply** to update the device.

Address Table

Packets addressed to destinations stored in either the Static or Dynamic databases are immediately forwarded to the port. The Dynamic MAC Address Table can be sorted by interface, VLAN, or MAC Address. Dynamic MAC addresses are learned from packets from sources that arrive at the device, while Static addresses are configured manually.

An address becomes associated with a port by learning the port from the frame's source address but if a frame that is addressed to a destination MAC address is not associated with a port, that frame is flooded to all relevant VLAN ports. To prevent the bridging table from overflowing, a dynamic MAC address, from which no traffic arrives for a set period, is erased.

The **Address Table** menu contains the following options:

- "Basic"
- "Advanced"

Basic

The Address Table **Basic** menu contains the following options:

- "Address Table"

Address Table

The Basic Address Table screen displays the MAC Address table according to the defined categories.

To query the Basic Address Table:

1. Click **Switching** > **Address Table** > **Basic** > **Address Table**. The Basic Address Table screen displays:

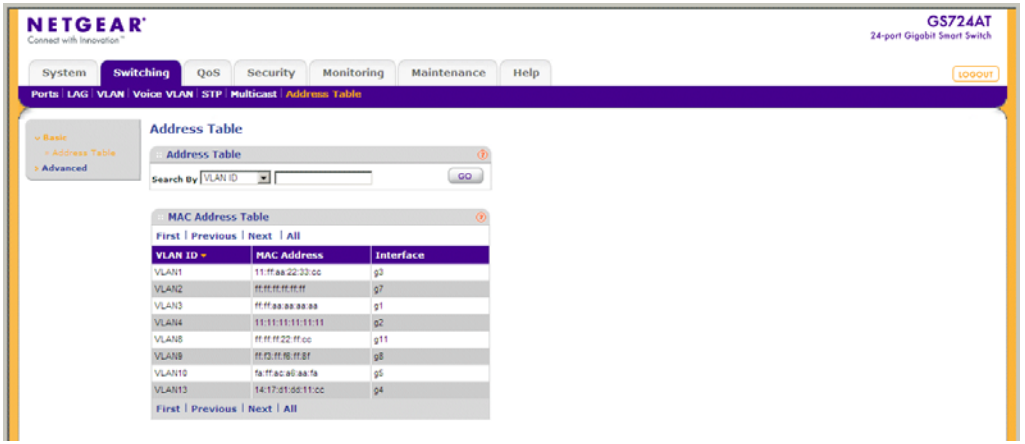


Figure 4-30

The Basic Address Table screen contains the following fields:

- **Search By** – Display the MAC Address list according to selected category and query field. The possible field values are:
  - VLAN ID – Display the MAC Address table entries that relate to the specific VLAN ID.
  - MAC Address – Display the MAC Address table entries that relate to MAC Address.
  - Interface – Display the MAC Address table entries that relate to the specific interface.
- **VLAN ID** – Displays the VLAN ID number to which the entry refers.
- **MAC Address** – Displays the MAC address to which the entry refers.
- **Interface** – Displays the interface to which the entry refers.

2. Select the **Search By** key from the list in the provided field.
3. Enter the value to be searched for in the provided box.
4. Click **Go** to execute the query.

To delete all addresses from the Basic Address Table:

1. Click **Switching** > **Address Table** > **Basic** > **Address Table**. The Basic Address Table screen displays.
2. Click **Clear All** to delete all entries in the address table.

Advanced

The Address Table **Advanced** menu contains the following options:

- "Static Addresses"
- "Dynamic Addresses"
- "Address Table"

Static Addresses

The Static Addresses screen contains a list of static MAC addresses. Static Addresses are added and removed from the Static Addresses screen. To prevent static MAC addresses from being deleted when the device is reset, ensure the port attached to the MAC address is locked.

To configure the Static MAC Address table:

1. Click **Switching > Address Table > Advanced > Static Addresses**. The Static Addresses screen displays:

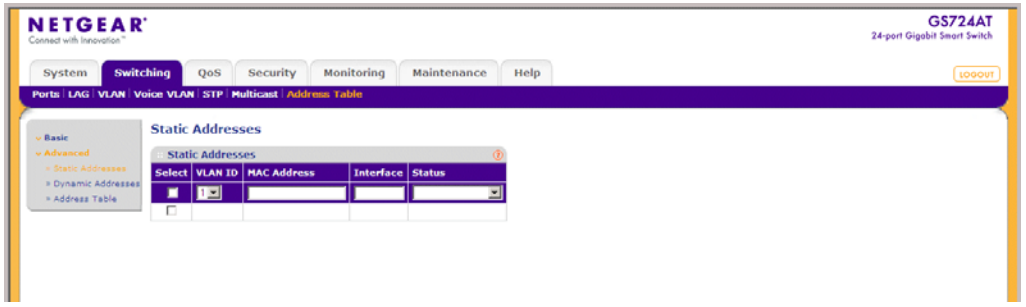


Figure 4-31

The Static Addresses screen contains the following fields:

- **VLAN ID** – Select the VLAN ID number to which the entry refers.
- **MAC Address** – Enter the MAC address to which the entry refers.
- **Interface** – Enter the interface to which the entry refers.

- **Status** – Select the MAC Address duration period within the table. The possible field values are:
  - Permanent – The MAC address is permanent.
  - Delete on Reset – The MAC address is deleted when the device is reset.
  - Delete on Timeout – The MAC address is deleted when the Address Aging Interval expires.
  - Secure – The MAC Address is defined for locked interfaces.

2. Select the address table entry.
3. Enter the **MAC Address** and Interface in the provided fields in the first row.
4. Select the MAC Address duration period **Status** from the list in the provided field in the first row.
5. Click **Apply** to update the device.

Dynamic Addresses

The Dynamic Addresses screen contains information about the aging time before a dynamic MAC address is erased.

To configure the Dynamic MAC Address table:

1. Click **Switching > Address Table > Advanced > Dynamic Addresses**. The Dynamic Addresses screen displays:

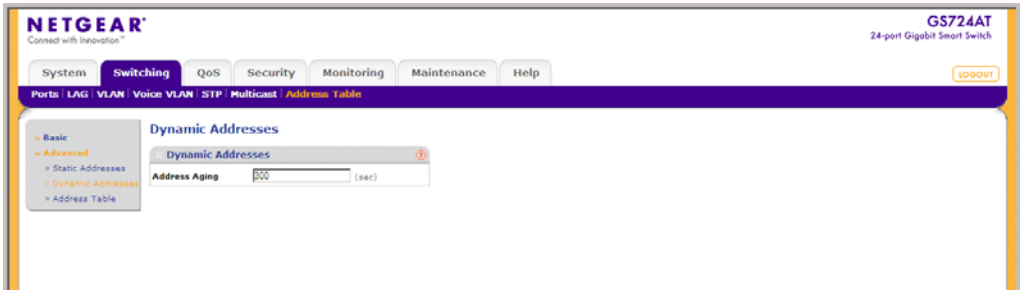


Figure 4-32

The Dynamic Addresses screen contains the following field:

- **Address Aging** – Enter the amount of time the MAC address remains in the Dynamic MAC Address table before it is timed out if no traffic from the source is detected. The range is 10 – 630 seconds. The default value is 300 seconds.

2. Enter the Address Aging in the provided field in the first row.
3. Click **Apply** to update the device.

Address Table

The Advanced Address Table screen displays the MAC Address table according to the defined categories.

To query the Advanced MAC Address Table:

1. Click **Switching** > **Address Table** > **Advanced** > **Address Table**. The Advanced Address Table screen displays:

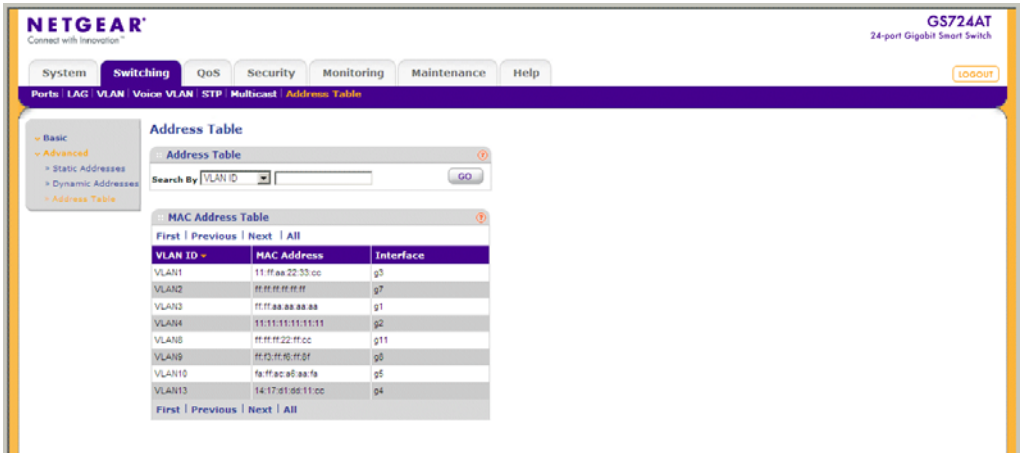


Figure 4-33

The Advanced Address Table screen contains the following fields:

- **Search By** – Display the MAC Address which can be sorted according to VLAN ID, MAC Address or Interface. The possible field values are:
  - VLAN ID – Display the MAC Address table entries that relate to the specific VLAN ID.
  - MAC Address – Display the MAC Address table entries that relate to MAC Address.
  - Interface – Display the MAC Address table entries that relate to the specific interface.
- **VLAN ID** – Displays the VLAN ID number to which the entry refers.
- **MAC Address** – Displays the MAC address to which the entry refers.
- **Interface** – Displays the interface to which the entry refers.

2. Select the **Search By** key from the list in the provided field.
3. Enter the value to be searched for in the provided box.
4. Click **Go** to execute the query.

To delete all addresses from the Advanced Address Table:

1. Click **Switching** > **Address Table** > **Advanced** > **Address Table**. The Advanced Address Table screen displays.
2. Click **Clear All** to delete all entries in the address table.

Chapter 5
Configuring QoS

Configuring the Basic and Advanced QoS Settings

The navigation pane at the top of the web browser interface contains a QoS tab that enables you to manage your GS700AT Series Smart Switch with features under the following main heading:

- "CoS"

The description that follows in this chapter describes configuring and managing QoS settings in the GS700AT Series Smart Switch.

CoS

Quality of Service (QoS) provides the ability to implement QoS and priority queuing within a network. For example, certain types of traffic that require minimal delay, such as Voice, Video, and real-time traffic can be assigned to a high priority queue, while other traffic can be assigned to a lower priority queue. The result is an improved traffic flow for traffic with high demand. QoS is defined by:

- **Classification** – Specifies which packet fields are matched to specific values. All packets matching the user-defined specifications are classified together.
- **Action** – Defines traffic management where packet forwarding is based on packet information and packet field values such as VLAN Priority Tag (VPT) and DiffServ Code Point (DSCP).

After packets are assigned to a specific egress queue, CoS services can be assigned to the queue. Egress queues are configured with a scheduling scheme by one of the following methods:

- **Strict Priority** – Ensures that time-sensitive applications are always forwarded. Strict Priority (SP) allows the prioritization of mission-critical, time-sensitive traffic over less time-sensitive applications. For example, under SP, voice over IP (VoIP) traffic can be prioritized so that it is forwarded before FTP or email (SMTP) traffic.

- **Weighted Round Robin** – Ensures that a single application does not dominate the device forwarding capacity. Weighted Round Robin (WRR) forwards entire queues in a round robin order. All queues can participate in WRR, except SP queues. If the traffic flow is minimal, and SP queues do not occupy the whole bandwidth allocated to a port, the WRR queues can share the bandwidth with the SP queues. This ensures that the remaining bandwidth is distributed according to the weight ratio. If WRR is selected, the following weights are assigned to the queues: 1, 2, 4, 8.

The **CoS** menu contains the following options:

- "Basic"
- "Advanced"

Basic

The CoS **Basic** menu contains the following options:

- "CoS Global Configuration"
- "CoS Interface Configuration"
- "Queue"
- "Bandwidth"

CoS Global Configuration

The CoS Global Configuration screen contains information for enabling QoS globally.

To configure CoS global parameters:

1. Click **QoS** > **CoS** > **Basic** > **CoS Global Configuration**. The CoS Global Configuration screen displays:

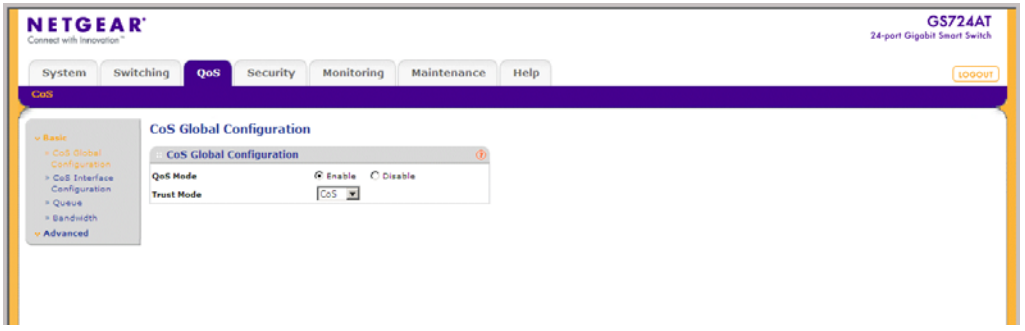


Figure 5-1

The CoS Global Configuration screen contains the following:

- **QoS Mode** – Select whether QoS is enabled or disabled on the device. The possible values are:
  - Enable – Enable QoS globally.
  - Disable – Disable QoS globally.
- **Trust Mode** – Select which packet fields to use for classifying packets entering the device. The possible Trust Mode field values are:
  - CoS – Classify traffic based on the CoS (VPT) tag value.
  - DSCP – Classify traffic based on the DSCP tag value.

2. Select the **QoS Mode** and **Trust Mode** in the provided fields.
3. Click **Apply** to update the device.

CoS Interface Configuration

The CoS Interface Configuration screen contains information for configuring the default CoS value on a selected interface. After CoS has been configured, the device original CoS default settings can be reassigned to the interface in the CoS Interface Configuration screen.

To configure CoS interface parameters:

1. Click **QoS** > **CoS** > **Basic** > **CoS Interface Configuration**. The CoS Interface Configuration screen displays:

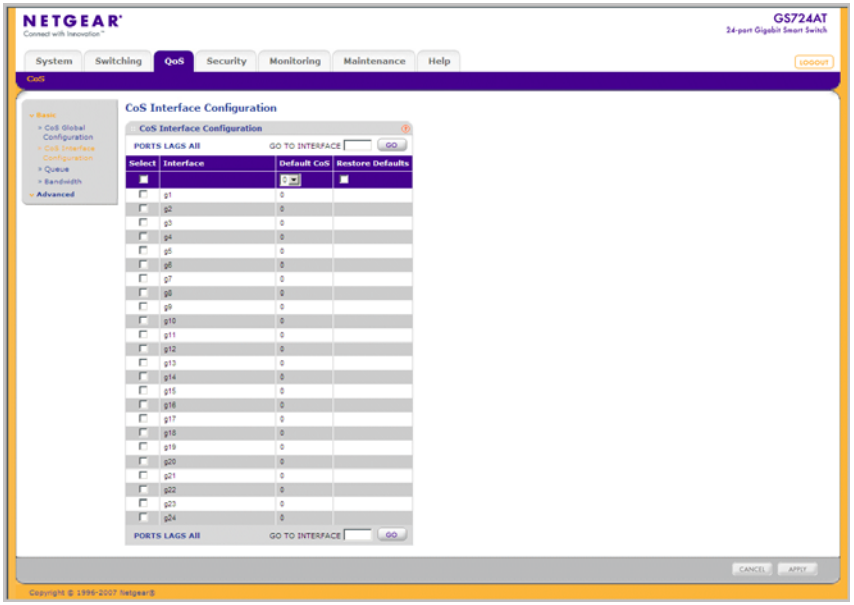


Figure 5-2

The CoS Interface Configuration screen contains the following:

- **Interface** – Displays the interface for which the default CoS parameters are defined.
- **Default CoS** – Select the default CoS value for incoming packets to the selected interface for which a VLAN priority (VPT) is not defined.
- **Restore Defaults** – Restore the factory CoS default settings to the selected interface. The possible field values are:
  - Checked – Restore the factory CoS default settings to the ports.
  - Unchecked – Maintain the current CoS settings.

2. Select the interface.
3. Select the **Default CoS** value from the list in the provided field in the first row.
4. Check or uncheck the **Restore Defaults** box in the interface entry row.
5. Click **Apply** to update the device.

Queue

The Queue screen contains fields for defining the QoS queue forwarding types.

To set the queue settings:

1. Click **QoS > CoS > Basic > Queue**. The Queue screen displays:

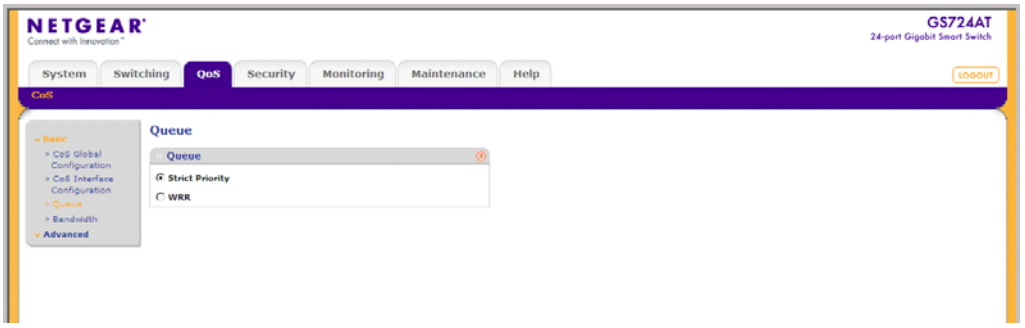


Figure 5-3

The Queue screen contains the following fields:

- **Strict Priority** – Select to specify traffic scheduling based strictly on the queue priority.
- **WRR** – Select to assign WRR weights to queues. The queue weights are preconfigured and are set to 1, 2, 4 and 8.

2. Select either **Strict Priority** or **WRR** to specify the traffic scheduling method.
3. Click **Apply** to update the device.

Bandwidth

After packets are assigned to a queue, a scheduling scheme can be assigned to an interface, using either:

- **Committed Burst Size** – Indicates the maximum number of data bits transmitted within a specific time interval.
- **Committed Information Rate** – Indicates the rate that data is transmitted. The rate is averaged over a minimum time increment.

The Bandwidth screen allows the user to define Ingress Rate Limit and Egress Shaping Rates.

To define bandwidth settings:

1. Click **QoS** > **CoS** > **Basic** > **Bandwidth**. The Bandwidth screen displays:

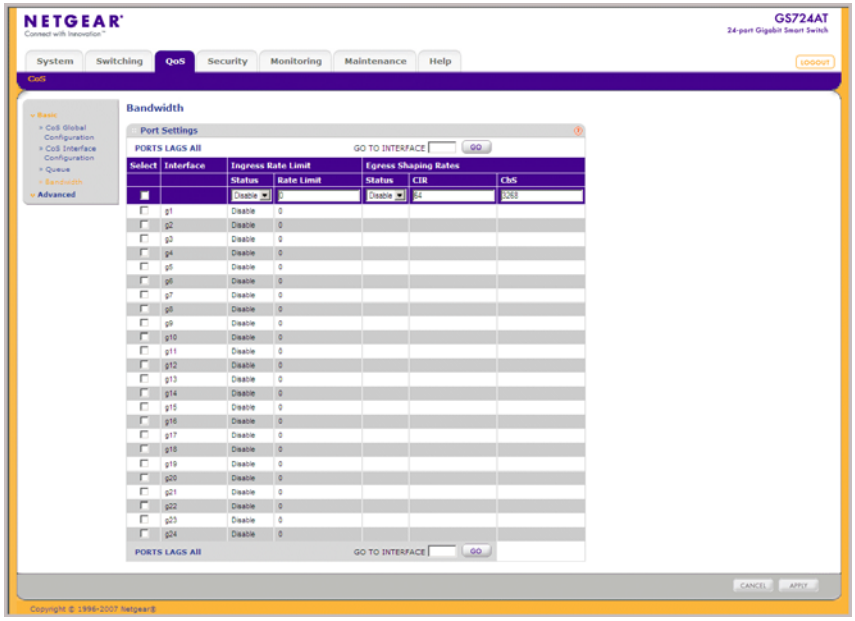


Figure 5-4

The Bandwidth screen contains the following fields:

- **Interface** – Displays the ports for which the bandwidth settings are displayed.
- **Ingress Rate Limit Status** – Select whether rate limiting is defined on the interface. The possible field values are:
  - Enable – Enable ingress rate limiting on the interface.
  - Disable – Disable ingress rate limiting on the interface.
- **Ingress Rate Limit** – Enter the rate limit in kilobits per second. The possible field range is 3500 to the maximum port speed. GE (Gigabit Ethernet) ports have a maximum speed of 1000000 kilobits per second. The field default value is 3500.
- **Egress Shaping Rates Status** – Select whether egress shaping is defined on the interface. The possible field values are:
  - Enable – Enable egress shaping rate on the interface.
  - Disable – Disable egress shaping rate on the interface. This is the default value.

- **Egress Shaping Rates CIR** – Enter the Egress Shaping Committed Information Rate (CIR) in kilobits per second. The possible field range is 64 to 1000000 for GE ports.
- **Egress Shaping Rates CbS** – Enter the Egress Shaping Committed Burst Size (CbS) in bits per second. The possible field range is 4096 to 16769020.

2. Select the interface.
3. Choose either Enable or Disable in the **Ingress Rate Limit Status** provided field in the first row.
4. If you selected Enable in the **Ingress Rate Limit Status** field, enter the **Ingress Rate Limit** in the provided field in the first row.
5. Choose either Enable or Disable in the **Egress Shaping Rate Status** provided field in the first row.
6. If you selected Enable in the **Egress Shaping Rate Status** field, enter the **Egress Shaping Rates CIR** and CbS in the provided fields in the first row.
7. Click **APPLY** to update the device.

Advanced

The CoS **Advanced** menu contains the following options:

- "CoS to Queue Mapping"
- "DSCP to Queue Mapping"

CoS to Queue Mapping

The CoS to Queue Mapping screen contains fields for mapping CoS values to traffic queues.

To map CoS values to queues:

1. Click **QoS > CoS> Advanced > CoS to Queue Mapping**. The CoS to Queue Mapping screen displays:

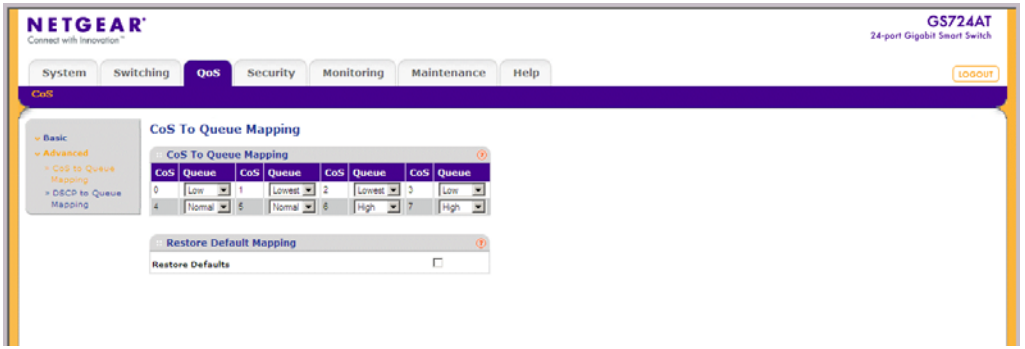


Figure 5-5

The CoS to Queue Mapping screen contains the following fields:

CoS to Queue Mapping

- **CoS** – Displays the CoS priority tag values, where 0 is the lowest and 7 is the highest.
- **Queue** – Select the traffic forwarding queue to which the CoS priority is mapped. Four traffic priority queues are supported (Lowest, Low, Normal and High). The High Queue is reserved for special traffic and is not recommended for use.

Restore Default Mapping

- **Restore Defaults** – Restore the device factory defaults for mapping CoS values to a forwarding queue. The possible field values are:
  - Checked – Restore the factory default settings for mapping CoS values to a forwarding queue.
  - Unchecked – Maintain the current CoS queue mapping settings.

2. Select the **Queue** values for each **CoS** value in the provided fields.
3. Check or uncheck the Restore Defaults box in the provided field.
4. Click **Apply** to update the device.

DSCP to Queue Mapping

The DSCP To Queue Mapping screen contains fields for mapping DSCP values to traffic queues for various PHBs (Per-Hop Behaviors). These include the CS (Class Selector), AF (Assured Forwarding) and EF (Expedited Forwarding). For example, a packet with a DSCP tag value of 1 can be assigned to the High queue.

To map DSCP values to queues:

1. Click **QoS > CoS> Advanced > DSCP To Queue Mapping**. The DSCP To Queue Mapping screen displays:

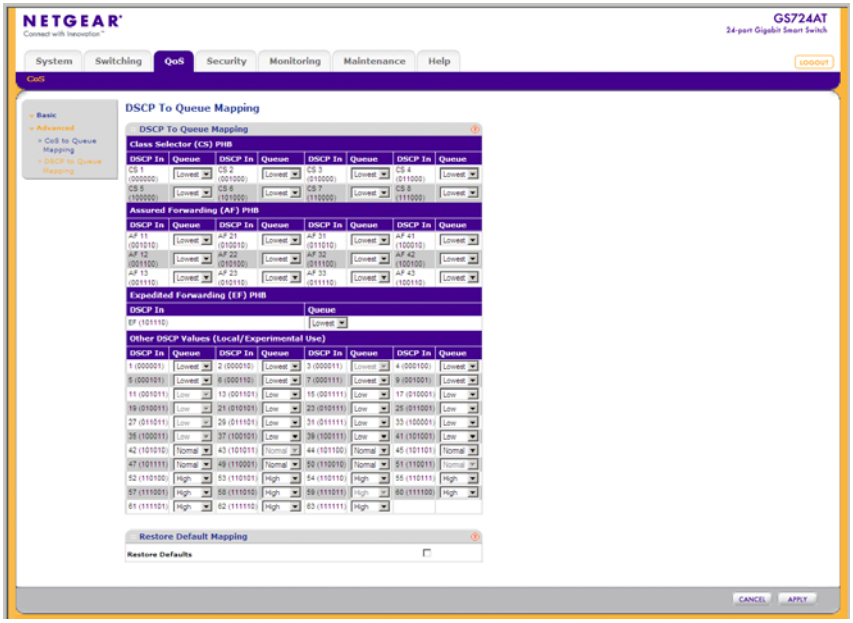


Figure 5-6

The DSCP To Queue Mapping screen contains the following fields:

DSCP to Queue Mapping

- **DSCP In** – Displays the incoming packet's DSCP value. The following DSCP In values are predefined: 3, 11, 19, 27, 35, 43, 51, 59.
- **Queue** – Select the traffic-forwarding queue to which the DSCP is mapped. Four traffic priority queues are supported (Lowest, Low, Normal and High). The High Queue is reserved for special traffic and is not recommended for use.

Restore Default Mapping

- **Restore Defaults**– Restore the DSCP Mapping device factory default values. The possible field values are:
  - Checked – Restore the factory default settings for DSCP mapping values.
  - Unchecked – Maintain the current DSCP mapping settings.

2. Select the **Queue** values for each **DSCP In** value in the provided fields.
3. Check or uncheck the Restore Defaults box in the provided field.
4. Click **Apply** to update the device.

Chapter 6
Managing Security

Setting Security Configuration Options

The navigation pane at the top of the web browser interface contains a Security tab that enables you to manage your GS700AT Series Smart Switch with features under the following main menu options:

- "Management Security"
- "Port Authentication"
- "Traffic Control"
- "ACL"

The description that follows in this chapter describes configuring and managing security settings in the GS700AT Series Smart Switch.

Management Security

The **Management Security** menu contains the following options:

- "User Configuration"
- "RADIUS"
- "TACACS+"
- "Authentication List"

User Configuration

The **User Configuration** menu contains the following options:

- "Change Password"

Change Password

The Change Password screen contains parameters for configuring device passwords. Authentication on this device uses only a password, not a username.

To change the device password:

1. Click **Security > Management Security > User Configuration > Change Password**. The Change Password screen displays:

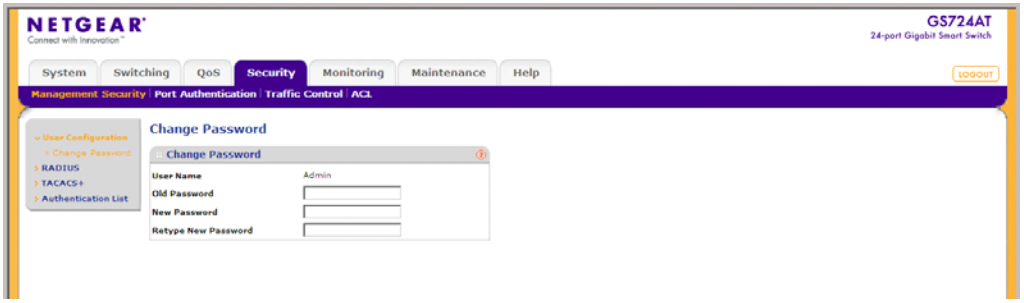


Figure 6-1

The Change Password screen contains the following fields:

- **User Name** – Displays the User Name.
- **Old Password** – Enter the current password for accessing the system.
- **New Password** – Enter a new password for accessing the system.
- **Retype New Password** – Repeat the new password used to access the system.

2. Enter the **Old Password**, **New Password** and **Retype New Password** in the provided fields.
3. Click **Apply** to update the device.

RADIUS

Remote Authorization Dial-In User Service (RADIUS) servers provide additional security for networks. RADIUS servers provide a centralized authentication method for web access. The user-assigned RADIUS parameters are applied to newly defined RADIUS servers. If values are not defined, the system defaults are applied to the new RADIUS servers.

The RADIUS menu contains the following options:

- “Authentication Server Configuration”
- “Accounting Server Configuration”

Authentication Server Configuration

To configure RADIUS servers:

1. Click **Security > Management Security > RADIUS > Authentication Server Configuration**. The RADIUS Authentication Server Configuration screen displays:

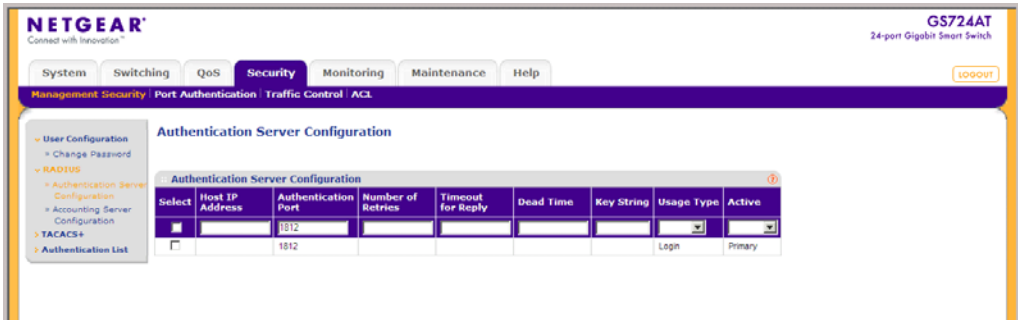


Figure 6-2

The RADIUS Authentication Server Configuration screen contains the following fields:

- **Host IP Address** – Enter the RADIUS Authentication Server IP address.
- **Authentication Port** – Enter the authentication port number. The authentication port is used to verify the RADIUS Server authentication. The field default is 1812.
- **Number of Retries** – Enter the number of transmitted requests sent to the RADIUS Authentication Server before a failure occurs. Possible field values are 1-10. The default value is 3.
- **Timeout for Reply** – Enter the amount of time (in seconds) the device waits for an answer from the RADIUS Authentication Server before retrying the query, or switching to the next server. Possible field values are 1-30. The default value is 3.
- **Dead Time** – Enter the default amount of time (in minutes) that a RADIUS Authentication Server is bypassed for service requests. The range is 0-200. The default value is 0.
- **Key String** – Enter the default key string used for authenticating and encrypting all RADIUS-communications between the device and the RADIUS Authentication Server. This key must match the RADIUS encryption.
- **Usage Type** – Select the RADIUS Authentication Server usage type. The default value is Login. The possible field values are:

  - Login – The RADIUS Authentication Server is used for authenticating user names and passwords.
  - 802.1X – The RADIUS Authentication Server is used for 802.1X authentication.
  - All – The RADIUS Authentication Server is used for authenticating user names and passwords, and 802.1X port authentication.
- **Active** – Select the priority in which the system performs authentication with a RADIUS Authentication Server. The system performs authentication initially with the RADIUS Primary Authentication Server, and if it fails, it performs authentication with the RADIUS Backup Authentication Server. The possible values are:
  - Primary – Defines the RADIUS Primary Authentication Server.
  - Backup – Defines the RADIUS Backup Authentication Server.

2. Select the RADIUS Authentication Server entry.
3. Enter the **Host IP Address**, **Authentication Port**, **Number of Retries**, **Timeout for Reply**, **Dead Time** and **Key String** in the provided fields in the first row.
4. Select the **Usage Type** and **Active** Authentication Server from the lists in the provided fields in the first row.
5. Click **Apply** to update the device.

To add a new RADIUS Authentication Server entry:

1. Click **Security > Management Security > RADIUS > Authentication Server Configuration**. The RADIUS Authentication Server Configuration screen displays.
2. Enter the **Host IP Address**, **Authentication Port**, **Number of Retries**, **Timeout for Reply**, **Dead Time** and **Key String** in the provided fields in the first row.
3. Select the **Usage Type** and **Active** Authentication Server from the lists in the provided fields in the first row.
4. Click **Add** to update the device.

To remove a RADIUS Authentication Server entry:

1. Click **Security > Management Security > RADIUS > Authentication Server Configuration**. The RADIUS Authentication Server Configuration screen displays.
2. Select the RADIUS Authentication Server entry.
3. Click **Delete** to remove the entry.

Accounting Server Configuration

RADIUS accounting enables recording of device management sessions (web login/logout but not SNMP) as well as 802.1x authentication sessions.

To configure RADIUS Accounting Servers:

1. Click **Security > Management Security > RADIUS > Accounting Server Configuration**. The RADIUS Accounting Server Configuration screen displays:

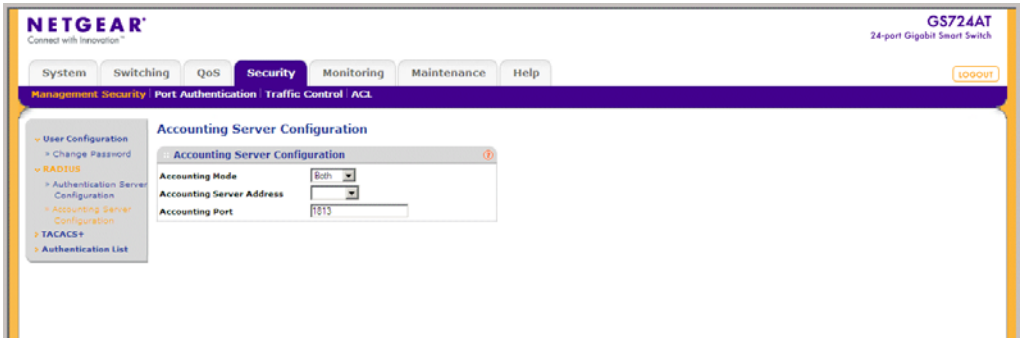


Figure 6-3

The RADIUS Accounting Server Configuration screen contains the following fields:

- **Accounting Mode** – Select the RADIUS accounting method. The possible field values are:
  - None – RADIUS accounting is disabled. This is the default.
  - 802.1x – 802.1X authentication sessions are recorded.
  - Login – Device management (Web login and logout) sessions are recorded.
  - Both – Both 802.1X authentication and device management sessions are recorded.
- **Accouting Server Address** – Select the RADIUS Accounting Server IP address.
- **Accounting Port** – Enter the RADIUS Accounting port number. The accounting port is used to handle RADIUS server accounting. The field default is 1813.

2. Select the RADIUS **Accounting Mode** from the list in the provided field.
3. Select the RADIUS **Accounting Server Address** from the list in the provided field.
4. Enter the RADIUS **Accounting Port** in the provided field.
5. Click **Apply** to update the device.

TACACS+

Terminal Access Controller Access Control System (TACACS+) provides centralized security user access validation. The system supports up-to 2 TACACS+ servers.

TACACS+ provides a centralized user management system, while still retaining consistency with RADIUS and other authentication processes.

The TACACS+ protocol ensures network integrity through encrypted protocol exchanges between the client and TACACS+ server. The user-assigned TACACS+ parameters are applied to newly defined TACACS+ servers. If values are not defined, the system defaults are applied to the new TACACS+ servers.

To configure TACACS+ Settings:

1. Click **Security** > **Management Security** > **TACACS+**. The TACACS+ screen displays:

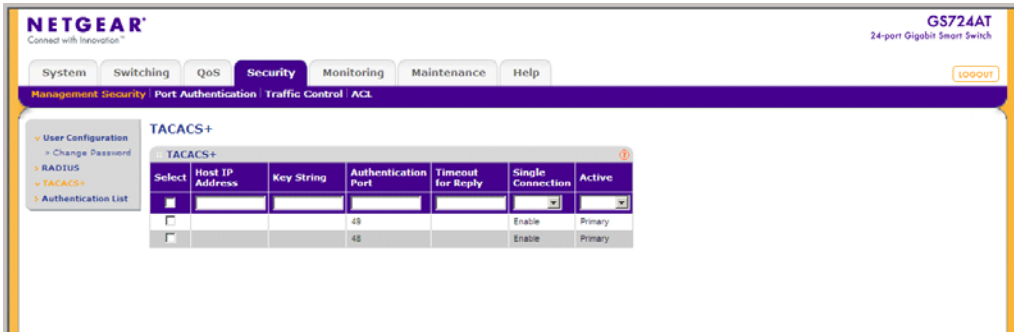


Figure 6-4

The TACACS+ screen contains the following fields:

- **Host IP Address** – Enter the TACACS+ Server IP address.
- **Key String** – Enter the default authentication and encryption key for TACACS+ communication between the device and the TACACS+ server.
- **Authentication Port** – Enter the port number via which the TACACS+ session occurs. The default port is port 49.
- **Timeout for Reply** – Enter the amount of time (in seconds) the device waits for an answer from the TACACS+ server before retrying the query, or switching to the next server. Possible field values are 1-30. The default value is 5.

- **Single Connection** – Select whether a single open connection between the host Authentication Port and the TACACS+ server is enabled or disabled. The possible field values are:
  - Enable – Enable a single connection.
  - Disable – Disable a single connection.
- **Active** – Select whether this server is the primary or backup TACACS+ server used for authentication. The possible values are:
  - Primary – Define the TACACS+ Primary Server.
  - Backup – Define the TACACS+ Backup Server.

2. Select the TACACS+ server entry.
3. Enter the **Host IP Address**, **Key String, Authentication Port** and **Timeout for Reply** in the provided fields in the first row.
4. Select the **Single Connection** status and **Active** server from the lists in the provided fields in the first row.
5. Click **Apply** to update the device.

To add a new TACACS+ server entry:

1. Click **Security** > **Management Security** > **TACACS+**. The TACACS+ screen displays.
2. Enter the **Host IP Address**, **Key String, Authentication Port** and **Timeout for Reply** in the provided fields in the first row.
3. Select the **Single Connection** status and **Active** server from the lists in the provided fields in the first row.
4. Click **Add** to update the device.

To remove a TACACS+ server entry:

1. Click **Security** > **Management Security** > **TACACS+**. The TACACS+ screen displays.
2. Select the TACACS+ server entry.
3. Click **Delete** to remove the entry.

Authentication List

The Authentication List screen contains information for defining an authentication method for the selected Authentication List. For example, if the user selects TACACS+ as the first entry, None as the second, this causes authentication to first occur at the TACACS+ server. If the TACACS+ server is inaccessible or not defined, the session is permitted.

Once the Authentication List is defined as Local, it is not possible to define an alternative authentication method as it is a built-in system authentication method.

In order to configure RADIUS/TACACS+ authentication, the user name should be configured as $enab15$ on the RADIUS/TACACS+ server.

To configure the Authentication List method:

1. Click **Security** > **Management Security** > **Authentication List**. The Authentication List screen displays:

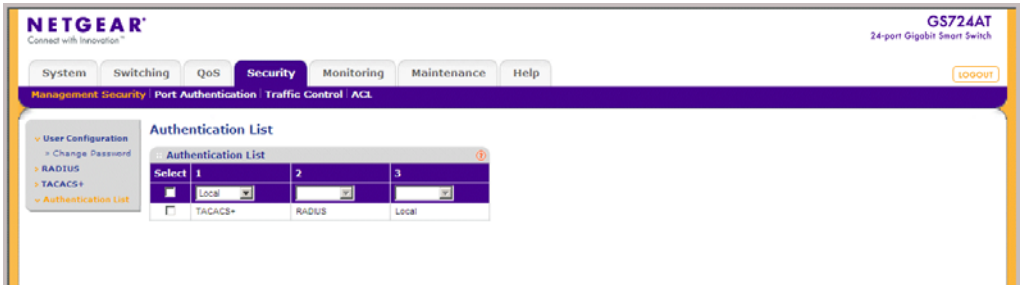


Figure 6-5

The Authentication List screen contains the following fields:

- **1,2,3** – Select the order in which authentication is applied. The possible field values are:
  - TACACS+ – Authenticate the user at the TACACS+ server. For more information, see "TACACS+".
  - RADIUS – Authenticate the user at the RADIUS server. For more information, see "RADIUS".
  - Local – Authenticate the user at the device level. The device checks the user name and password for authentication
  - None – Assign no authentication method to the authentication list.

2. Select the Authentication List entry.

3. Select the order of authentication (1,2,3) for each method from the list in the provided field in the first row.
4. Click **Apply** to update the device.

Port Authentication

The **Port Authentication** menu contains the following options:

- "Basic"
- "Advanced"

Basic

The Port Authentication **Basic** menu contains the following option:

- "802.1X Configuration"

802.1X Configuration

The Basic 802.1X Configuration screen allows network managers to configure network authentication parameters. In addition, the Guest VLAN option is enabled from the Basic 802.1X Configuration screen.

To define the 802.1X configuration:

1. Click **Security > Port Authentication > Basic > 802.1X Configuration**. The Basic 802.1X Configuration screen displays:

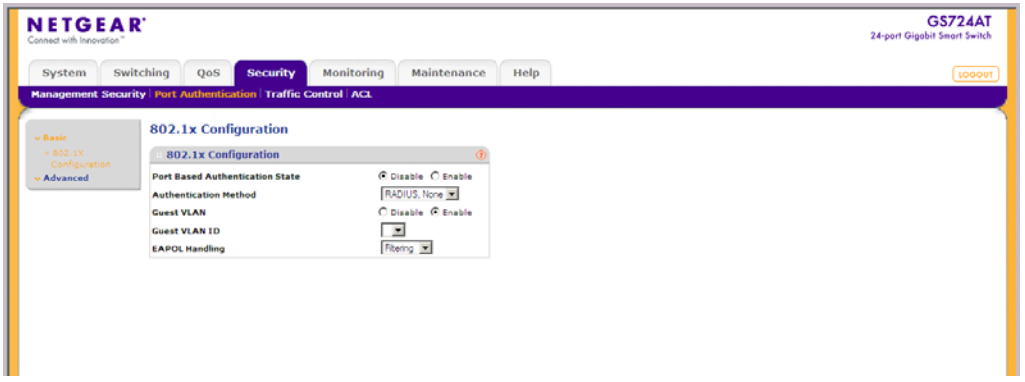


Figure 6-6

The Basic 802.1X Configuration screen contains the following fields:

- **Port Based Authentication State** – Select whether port-based authentication is enabled or disabled on the device. The possible field values are:
  - Disable – Disable port-based authentication on the device.
  - Enable – Enable port-based authentication on the device.
- **Authentication Method** – Select the authentication method used for port authentication. The possible field values are:
  - RADIUS, None – Port authentication is first attempted through the RADIUS server. If the RADIUS server is inaccessible or not defined, then no authentication method (None) is used and the session is permitted.
  - RADIUS – Port authentication is through the RADIUS server.
  - None – No authentication method is used to authenticate the port.
- **Guest VLAN** – Select whether the Guest VLAN is enabled or disabled on the device. The default VLAN cannot be defined as a Guest VLAN. The possible field values are:
  - Disable – Disable the Guest VLAN on the device. This is the default value.
  - Enable – Enable using a Guest VLAN for unauthorized ports. If a Guest VLAN is enabled, the unauthorized port automatically joins the VLAN selected in the VLAN List field.
- **Guest VLAN ID** – Select the guest VLAN ID from the list of currently defined VLANs.
- **EAPOL Handling** – Select the method of handling EAPOL (Extensible Authentication Protocol Over LAN) packets when 802.1X authentication is disabled. The possible field values are:
  - Filtering – EAPOL packets are filtered.
  - Flooding – EAPOL packets are flooded to all ports.

2. Select Disable or Enable for the **Port Based Authentication State** in the provided field.
3. If you selected Enable for the **Port Based Authentication State**, then select the **Authentication Method** from the list in the provided field.
4. Select Disable or Enable for the **Guest VLAN** status in the provided field.
5. If you selected Enable for the **Guest VLAN** field, then select the **VLAN ID** from the list in the provided field.

6. If you selected Disable for the **Port Based Authentication State**, select the **EAPOL Handling** mode in the provided field.
7. Click **Apply** to update the device.

Advanced

The Port Authentication **Advanced** menu contains the following options:

- "802.1X Configuration"
- "Port Authentication"

802.1X Configuration

The Advanced 802.1X Configuration screen allows network managers to configure network authentication parameters. In addition, the Guest VLAN option is enabled from the Advanced 802.1X configuration screen.

To define the 802.1X configuration:

1. Click **Security > Port Authentication > Advanced > 802.1X configuration**. The Advanced 802.1X Configuration screen displays:

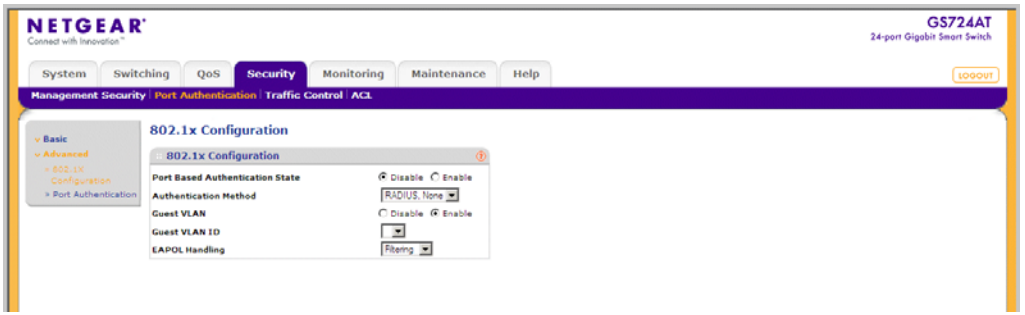


Figure 6-7

The Advanced 802.1X Configuration screen contains the following fields:

- **Port Based Authentication State** – Enable port-based authentication on the device. The possible field values are:
  - Disable – Disable port-based authentication on the device.
  - Enable – Enable port-based authentication on the device.

- **Authentication Method** – Enter the authentication method used for port authentication. The possible field values are:
  - RADIUS, None – Port authentication is first attempted through the RADIUS server. If the RADIUS server is inaccessible or not defined, then no authentication method (None) is used and the session is permitted.
  - RADIUS – Port authentication is through the RADIUS server.
  - None – No authentication method is used to authenticate the port.
- **Guest VLAN** – Enter whether the Guest VLAN is enabled on the device. The possible field values are:
  - Disable – Disable Guest VLAN on the device. This is the default value.
  - Enable – Enable using a Guest VLAN for unauthorized ports. If a Guest VLAN is enabled, the unauthorized port automatically joins the VLAN selected in the VLAN List field.
- **Guest VLAN ID** – Select the guest VLAN ID from the list of currently defined VLANs.
- **EAPOL Handling** – Select the method of handling EAPOL (Extensible Authentication Protocol Over LAN) packets when 802.1X authentication is disabled. The possible field values are:
  - Filtering – EAPOL packets are filtered.
  - Flooding – EAPOL packets are flooded to all ports.

2. Select Disable or Enable for the **Port Based Authentication State** in the provided field.
3. If you selected Enable for the **Port Based Authentication State**, then select the **Authentication Method** from the list in the provided field.
4. Select Disable or Enable for the **Guest VLAN** status in the provided field.
5. If you selected Enable for the **Guest VLAN** field, then select the **VLAN ID** from the list in the provided field.
6. If you selected Disable for the **Port Based Authentication State**, select the **EAPOL Handling** mode in the provided field.
7. Click **Apply** to update the device.

Port Authentication

The Port Authentication screen enables configuring port authentication interface parameters.

To configure port-based authentication global properties:

1. Click **Security > Port Authentication > Advanced > Port Authentication**. The Port Authentication screen displays

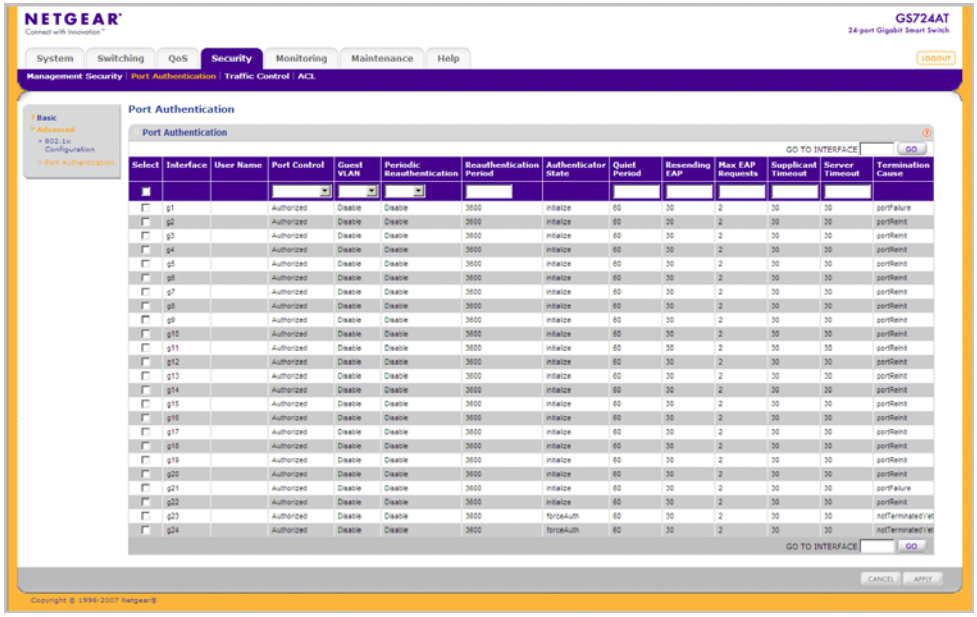


Figure 6-8

The Port Authentication screen contains the following fields:

- **Interface** – Displays the interfaces.
- **User Name** – Displays the supplicant (client) user name, once the user is authenticated.
- **Port Control** – Select the port authorization state.
  - Auto – The port control is Auto and a single client has been authenticated via the port.
  - Authorized – The port control is Forced Authorized, and clients have full port access.
  - Unauthorized – Either the port control is force Unauthorized, or the port control is Auto but a client has not been authenticated via the port.
- **Guest VLAN** – Select whether the Guest VLAN is enabled or disabled on the port. The default VLAN cannot be defined as a Guest VLAN. The possible field values are:

  - Enable – Enable using a Guest VLAN for the unauthorized port. If a Guest VLAN is enabled, the unauthorized port automatically joins the VLAN selected in the VLAN List field.
  - Disable – Disable the Guest VLAN on the port. This is the default value.
- **Periodic Reauthentication** – Select whether periodic port reauthentication is enabled or disabled. The possible field values are:
  - Enable – Enable periodic port reauthentication.
  - Disable – Disable port reauthentication. This is the default value.
- **Reauthentication Period** – Enter the time span (in seconds) in which the selected port is reauthenticated. The field default is 3600 seconds.
- **Authenticator State** – Displays the port authentication status. The possible field values are Initialize, Disconnected, Connecting, Authenticating, Authenticated, Aborting, Held, ForceAuth and ForceUnauthNew.
- **Quiet Period** – Enter the number of seconds that the device remains in the quiet state following a failed authentication exchange. The possible field range is 0-65535. The field default is 60 seconds.
- **Resending EAP** – Enter the amount of time (in seconds) that lapses before EAP requests are resent. The field default is 30 seconds.
- **Max EAP Requests** – Enter the total amount of EAP requests sent. If a response is not received after the defined period, the authentication process is restarted. The field default is 2 retries.
- **Supplicant Timeout** – Enter the amount of time (in seconds) that lapses before EAP requests are resent to the supplicant. The field default is 30 seconds.
- **Server Timeout** – Enter the amount of time (in seconds) that lapses before the device re-sends a request to the authentication server. The field default is 30 seconds.
- **Termination Cause** – Displays the reason port authentication was terminated. The possible field values are Supplicant logoff, Port failure, Supplicant restart, Reauthentication failed, Force unauthorized, Port reinitialize, Port admin disabled and Undefined.

2. Select the interface.

3. Select the **Port Control** state, **Guest VLAN** mode and **Periodic Reauthentication** status in the provided fields in the first row.

4. If you selected Enable as the **Periodic Reauthentication** status, enter the **Reauthentication Period** in the provided field in the first row.
5. Enter the **Quiet Period**, **Resending EAP** time, **Max EAP Requests**, **Supplicant Timeout** and **Server Timeout** in the provided field in the first row.
6. Click **Apply** to update the device.

Traffic Control

The Traffic Control menu contains the following options:

- "Storm Control"
- "Port Security"

Storm Control

Storm Control limits the amount of Multicast and Broadcast frames accepted and forwarded by the device. When Layer 2 frames are forwarded, Broadcast, and Multicast frames are flooded to all ports on the relevant VLAN. This occupies bandwidth and loads all nodes on all ports.

A Broadcast Storm is a result of an excessive amount of broadcast messages simultaneously transmitted across a network by a single port. Forwarded message responses are heaped onto the network, straining network resources or causing the network to time out.

Storm control can be enabled per port by defining the packet type and the rate the packets are transmitted. The system measures the incoming Broadcast and Multicast frame rates separately on each port, and discards the frames when the rate exceeds a user-defined rate. By default, Storm Control is enabled on all ports for Broadcast packets with a threshold of 200 kbps.

The Storm Control screen provides fields for configuring broadcast storm control.

To configure Storm Control:

1. Click **Security > Traffic Control > Storm Control**. The Storm Control screen displays:

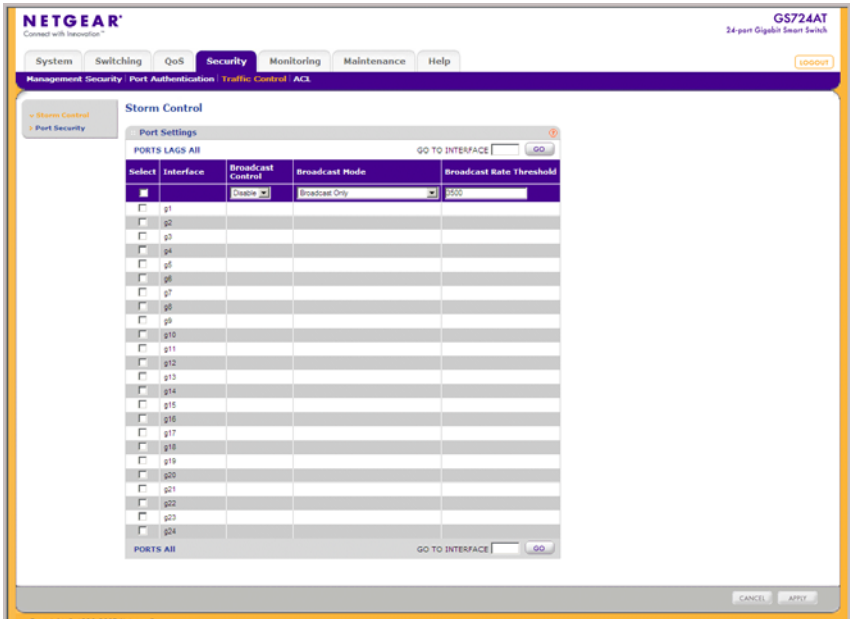


Figure 6-9

The Storm Control screen contains the following fields:

- **Interface** – Displays the port number for which the storm control information is displayed.
- **Broadcast Control** – Select whether storm control is enabled or disabled on the interface according to Broadcast mode. The possible field values are:
  - Enable – Enable storm control on the interface.
  - Disable – Disable storm control on the interface.
- **Broadcast Mode** – Select the Broadcast control mode on the interface. The possible field values are:
  - Multicast & Broadcast & Unknown Unicast – Count Broadcast, Multicast and Unicast traffic together.
  - Multicast & Broadcast – Count Broadcast and Multicast traffic together.
  - Broadcast Only – Count Broadcast traffic only. This mode is enabled by default.

- **Broadcast Rate Threshold** – Enter the maximum rate (kilobits per second) at which broadcast packets are forwarded. GE (Gigabit Ethernet) ports have a range of 3500 - 1000000. The default value for GE ports is 3500.

2. Select the interface.
3. Select Enable or Disable **Broadcast Control** in the provided field in the first row.
4. If you selected Enable **Broadcast Control**, select the **Broadcast Mode** from the list in the provided field in the first row.
5. If you selected Enable **Broadcast Control**, enter the **Broadcast Rate Threshold** in the provided field in the first row.
6. Click **Apply** to update the device.

Port Security

Network security can be increased by limiting access on a specific port only to users with specific MAC addresses. The MAC addresses can be dynamically learned or statically configured. Locked port security monitors both received and learned packets that are received on specific ports. Access to the locked port is limited to users with specific MAC addresses. These addresses are either manually defined on the port, or learned on that port up to the point when it is locked. When a packet is received on a locked port and the packet source MAC address is not tied to that port (either it was learned on a different port, or it is unknown to the system), the protection mechanism is invoked. It provides the following options for unauthorized packets arriving at a locked port:

- Forwarded
- Discarded with no trap
- Discarded with a trap
- Shuts down the port

Locked port security also enables storing a list of MAC addresses in the configuration file. The MAC address list can be restored after the device has been reset.

To define port security:

1. Click **Security** > **Traffic Control** > **Port Security**. The Port Security screen displays:

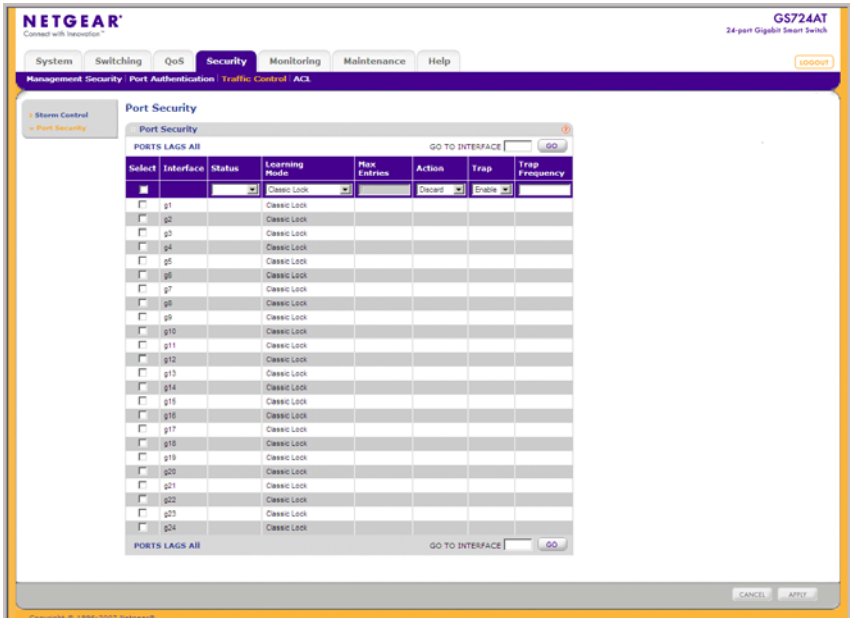


Figure 6-10

The Port Security screen contains the following fields:

- **Interface** – Displays the port or LAG name.
- **Status** – Select the port security status. The possible field values are:
  - Locked – The port is currently locked.
  - Unlocked – The port is currently unlocked. This is the default value.
- **Learning Mode** – Select the locked port type. The possible field values are:
  - Classic Lock – Locks the port, and only forwards packets that have been learned statically or dynamically, prior to locking the port. The lock is effective immediately.
  - Limited Dynamic Lock – The port is unlocked. Locks the port after a user-defined number of MAC addresses have been dynamically learned on the port. After the port is locked, packets are forwarded only from MAC addresses that have been learned prior to locking the port.

- **Max Entries** – Enter the maximum number of MAC addresses that can be learned on the port. The Max Entries field is enabled only if the Limited Dynamic Lock mode is selected. The range is 1-128 entries. The default value is 1.
- **Action** – Select the action to be applied to packets arriving on a locked port. The possible field values are:
  - Forward – Forward packets from an unknown source without learning the MAC address.
  - Discard – Discard packets from any unlearned source. This is the default value.
  - Shutdown – Discard packets from any unlearned source and shut down the port. The port remains shut down until reactivated or until the device is reset.
- **Trap** – Select whether traps are enabled or disabled when a packet from an unknown source is received on a locked port. The possible field values are:
  - Enable – Enable traps.
  - Disable – Disable traps. This is the default value.
- **Trap Frequency (Sec)** – Enter the frequency at which traps are sent. The field format is in seconds. The range is 1-1,000,000. The default value is 10 seconds.

2. Select the port security **Status**, **Learning Mode**, **Action** and **Trap** status from the lists in the provided fields in the first row.
3. Enter the **Max Entries** and **Trap Frequency** in the provided fields in the first row.
4. Click **Apply** to update the device.

ACL

Access Control Lists (ACL) allow network managers to define classification actions and rules for specific ingress ports. Packets entering an ingress port, with an active ACL, are either admitted or denied entry and the ingress port is disabled. If they are denied entry, the user can disable the port.

The **ACL** menu contains the following options:

- "MAC ACL"
- "MAC Rules"
- "MAC Binding Configuration"
- "IP ACL"

- "IP Rules"
- "IP Binding Configuration"
- "Binding Table"

MAC ACL

The MAC Configuration screen allows a MAC Based ACL to be defined.

To view or rename MAC Based ACLs:

1. Click **Security** > **ACL** > **MAC ACL**. The MAC Configuration screen displays:

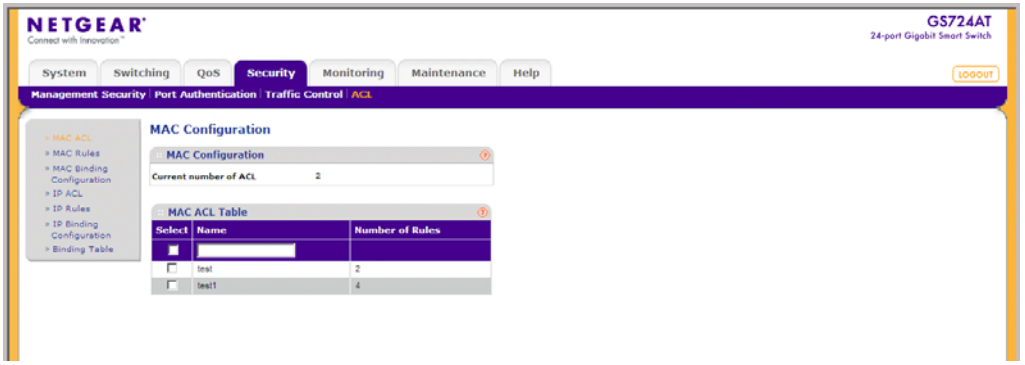


Figure 6-11

The MAC Configuration screen contains the following fields:

MAC Configuration

- **Current number of ACL** – Displays the current number of user-defined ACLs.

MAC ACL Table

- **Name** – Enter the user-defined MAC based ACL name.
- **Number of Rules** – Displays the current number of rules in the ACL.

2. Select the ACL entry.
3. Enter the new ACL Name in the provided field in the first row.
4. Click **Apply** to update the device.

To add a new MAC-based ACL entry:

1. Click **Security > ACL > MAC ACL**. The MAC Configuration screen displays.
2. Enter the ACL Name in the provided field in the first row.
3. Click **Add** to update the device.

To remove a MAC-based ACL entry:

1. Click **Security > ACL > MAC ACL**. The MAC Configuration screen displays.
2. Select the ACL entry.
3. Click **Delete** to remove the entry.

MAC Rules

The MAC Rules screen allows a MAC Rule to be defined within a configured ACL. Rules can be added only if the ACL is not bound to an interface.

To define MAC Rules:

1. Click **Security > ACL > MAC Rules**. The MAC Rules screen displays:

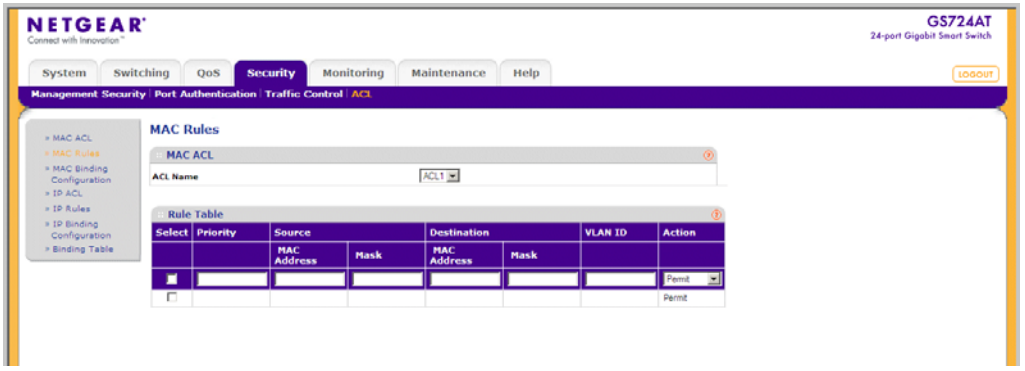


Figure 6-12

The MAC Rules screen contains the following fields:

MAC ACL

- **ACL Name** – Select the ACL Name from the list.

Rule Table

- **Priority** – Enter the rule priority. When the packet is matched to a rule, user groups are either granted permission or denied device management access. The rule number is essential to matching packets to rules, as packets are matched on a first-fit basis.
- **Source MAC Address** – Enter the source MAC Address.
- **Source Mask** – Enter the mask of the new source MAC address.
- **Destination MAC Address** – Enter the destination MAC address.
- **Destination Mask** – Enter the mask of the new destination MAC address.
- **VLAN ID** – Enter the VLAN ID to which the MAC address is attached in the MAC Rules database.
- **Action** – Select the action applied to packets with MAC addresses that have been filtered. The possible field values are:
  - Permit – Permit access to the device.
  - Deny – Deny access to packets originating from the blocked MAC address.
  - Shutdown – Drop packets that meet the ACL criteria, and disable the port to which the packet was addressed.

2. Select the **ACL Name** from the list in the provided field.
3. Select the rule entry.
4. Enter the provided fields in the first row.
5. Click **Apply** to update the device.

To add a MAC rule:

1. Click **Security > ACL > MAC Rules**. The MAC Rules screen displays.
2. Select the **ACL Name** from the list in the provided field.
3. Enter the provided fields in the first row.
4. Click **Add** to update the device.

To delete a MAC rule:

1. Click **Security > ACL > MAC Rules**. The MAC Rules screen displays.
2. Select the **ACL Name** from the list in the provided field.
3. Select the rule entry.

4. Click **Delete** to remove the entry.

MAC Binding Configuration

To bind interfaces to an ACL:

1. Click **Security > ACL > MAC Binding Configuration**. The MAC Binding Configuration screen displays:

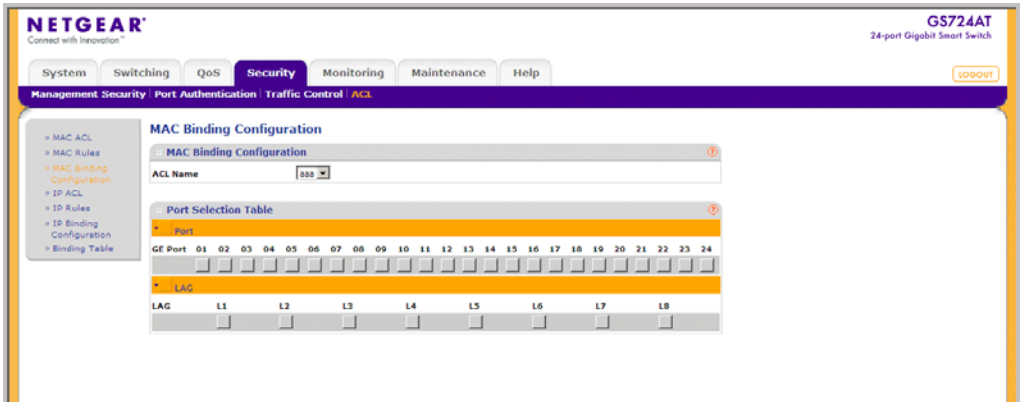


Figure 6-13

The MAC Binding Configuration screen contains the following fields:

MAC Binding Configuration

- **ACL Name** – Select the ACL Name for viewing and modifying ACL bound interfaces.

Port Selection Table

2. Select the interfaces to which the ACLs are bound.
3. Select the **ACL Name** from the list in the provided field.
4. Select the interfaces to bind to the selected ACL Name by one of the following methods.
   a. Click on the port's or **LAG's** gold bar to display the associated interfaces, and then select the interfaces to bind by clicking on the boxes below the interfaces.

      or

   b. Click on the port's or **LAG's** quick box to select all the associated interfaces.
5. Click **Apply** to update the device.

IP ACL

The IP ACL screen allows an IP Based ACL to be defined.

To view or rename IP Based ACLs:

1. Click **Security > ACL > IP ACL**. The IP ACL screen displays:

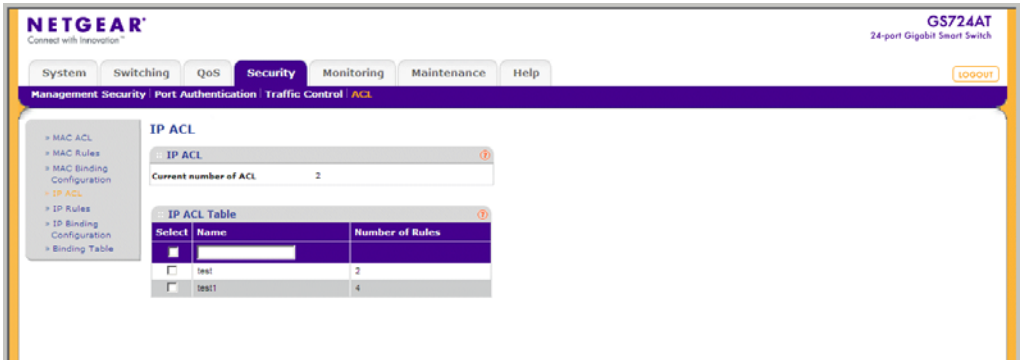


Figure 6-14

The IP ACL screen contains the following fields:

IP ACL

- **Current number of ACL** – Displays the current number of user-defined ACLs.

IP ACL Table

- **Name** – Enter the user-defined IP based ACL name.
- **Number of Rules** – Displays the current number of rules in the ACL.

2. Select the ACL entry.
3. Enter the new ACL Name in the provided field in the first, editable row.
4. Click **Apply** to update the device.

To add a new IP-based ACL entry:

1. Click **Security > ACL > IP ACL**. The IP ACL screen displays.
2. Click **Add** to create a new entry or duplicate an existing entry.
3. Select the ACL entry.
4. Enter the ACL Name in the provided field in the first, editable row.

5. Click **Apply** to update the device.

To remove an IP-based ACL entry:

1. Click **Security > ACL > IP ACL**. The IP ACL screen displays.
2. Select the ACL entry.
3. Click **Delete** to remove the entry.

IP Rules

The IP Rules screen allows an IP Rule to be defined within a configured ACL. Rules can be added only if the ACL is not bound to an interface.

To define IP Rules:

1. Click **Security > ACL > IP Rules**. The IP Rules screen displays:

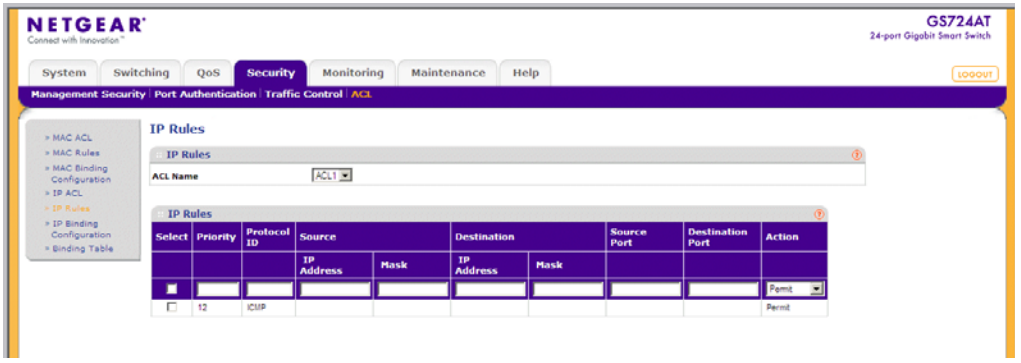


Figure 6-15

The IP Rules screen contains the following fields:

IP ACL

- **ACL Name** – Select the ACL Name from the list.

IP Rules

- **Priority** – Enter the rule priority. When the packet is matched to a rule, user groups are either granted permission or denied device management access. The rule number is essential to matching packets to rules, as packets are matched on a first-fit basis.
- **Protocol ID** – Enter the protocol in the rule to which the packet is matched.
- **Source IP Address** – Enter the source IP Address.

- **Source Mask** – Enter the mask of the new source IP address.
- **Destination IP Address** – Enter the destination IP address.
- **Destination Mask** – Enter the mask of the new destination IP address.
- **Source Port** – Enter the source port that is matched to packets.
- **Destination Port** – Enter the destination port that is matched to packets.
- **Action** – Select the action applied to packets with IP addresses that have been filtered. The possible field values are:
  - **Permit** – Permit access to the device.
  - **Deny** – Deny access to packets originating from the blocked IP address.
  - **Shutdown** – Drop packets that meet the ACL criteria, and disable the port to which the packet was addressed.

2. Select the **ACL Name** from the list in the provided field.
3. Select the rule entry.
4. Enter the provided fields in the first row.
5. Click **Apply** to update the device.

To add an IP rule:

1. Click **Security > ACL > IP Rules**. The IP Rules screen displays.
2. Select the **ACL Name** from the list in the provided field.
3. Click **Add** to create a new entry or duplicate an existing entry.
4. Select the added entry.
5. Enter the provided fields in the first row.
6. Click **Apply** to update the device.

To delete an IP rule:

1. Click **Security > ACL > IP Rules**. The IP Rules screen displays.
2. Select the **ACL Name** from the list in the provided field.
3. Select the rule entry.
4. Click **Delete** to remove the entry.

IP Binding Configuration

To bind interfaces to an ACL:

1. Click **Security > ACL > IP Binding Configuration**. The IP Binding Configuration screen displays:

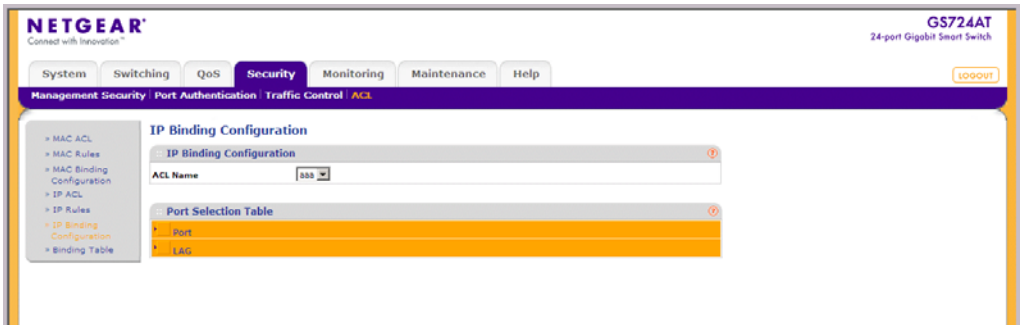


Figure 6-16

The IP Binding Configuration screen contains the following fields:

IP Binding Configuration

- **ACL Name** – Select the ACL Name for viewing and modifying ACL bound interfaces.

Port Selection Table

- Select the interfaces for which the ACLs are bound.

2. Select the **ACL Name** from the list in the provided field.
3. Select the interfaces to bind to the selected ACL Name by one of the following methods.
   a. Click on the port or **LAG** gold bar to display the associated interfaces, and then select the interfaces to bind by clicking on the boxes below the interfaces.

      or

   b. Click on the port's or LAG's quick box to select all the associated interfaces.
4. Click **Apply** to update the device.

Binding Table

To view the ACL Binding Table:

1. Click **Security > ACL > Binding Table**. The Binding Table screen displays:

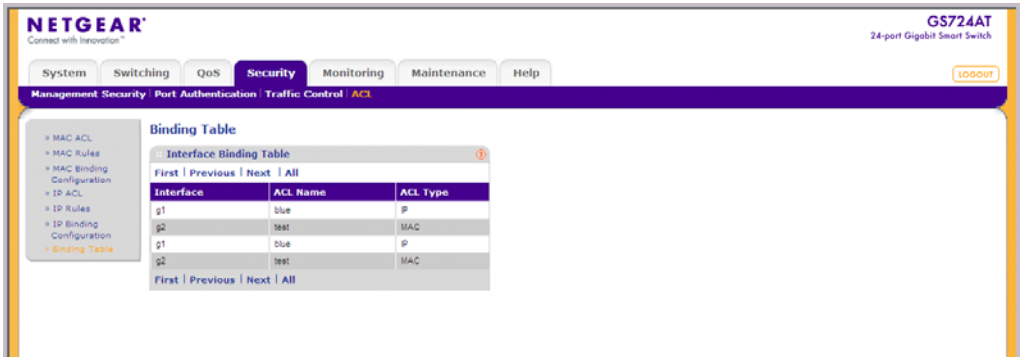


Figure 6-17

The Binding Table screen contains the following fields:

Interface Binding Table

- **Interface** – Displays the interfaces for which the ACLs are bound.
- **ACL Name** – Displays the ACL Name.
- **ACL Type** – Displays the ACL Type. The possible field values are:
  - IP – The ACL is IP address based.
  - MAC – The ACL is MAC address based.

Chapter 7
Monitoring the Switch

Setting Monitoring Options

The navigation pane at the top of the web browser interface contains a Monitoring tab that enables you to manage your GS700AT Series Smart Switch with features under the following main menu options:

- "Logs"
- "RMON"
- "Port Mirroring"

The description that follows in this chapter describes configuring and managing monitoring settings in the GS700AT Series Smart Switch.

Logs

Event messages have a unique format, as per the SYSLOG RFC recommended message format for all error reporting, for example, Syslog+ local device reporting. Messages are assigned a severity code, and include a message mnemonic, which identifies the source application generating the message. Messages are filtered based on their urgency or relevancy. The following table contains the Log Severity Levels:

Table 7-1. Severity Levels

Severity	Severity Level	Severity Level Description
Emergency	0	The system is not functioning.
Alert	1	The system needs immediate attention.
Critical	2	The system is in a critical state.
Error	3	A system error has occurred.
Warning	4	A system warning is logged.
Notice	5	The system is functioning properly, but a system notice is logged.

Table 7-1. Severity Levels

Severity	Severity Level	Severity Level Description
Informational	6	Device information is provided.
Debug	7	Detailed log information is provided.

This section provides information for managing logs. The logs enable viewing device events in real time, and recording the events for later usage. Logs record and manage events and report errors and informational messages.

The **Logs** menu contains the following options:

- "Logs Configuration"
- "Log Filter"
- "Memory Log"
- "Flash Log"
- "Server Log"

Logs Configuration

The Logs Configuration screen contains fields for enabling and disabling logs globally.

To enable or disable event logging:

1. Click **Monitoring** > **Logs** > **Logs Configuration**. The Logs Configuration screen displays:

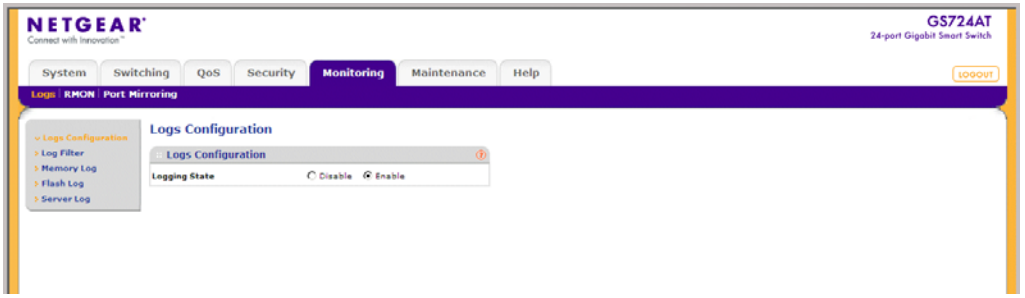


Figure 7-1

The Logs Configuration screen contains the following field:

- **Logging State** – Select whether to enable or disable the device global logs for Cache, File and Server Logs. Console logs are enabled by default. The possible field values are:
  - Disable – Disable device logs.

– Enable – Enable device logs.

2. Select either Enable or Disable as the **Logging State** in the provided field.
3. Click **Apply** to update the device.

Log Filter

To configure log filters:

1. Click **Monitoring > Logs > Log Filter**. The Log Filter screen displays:

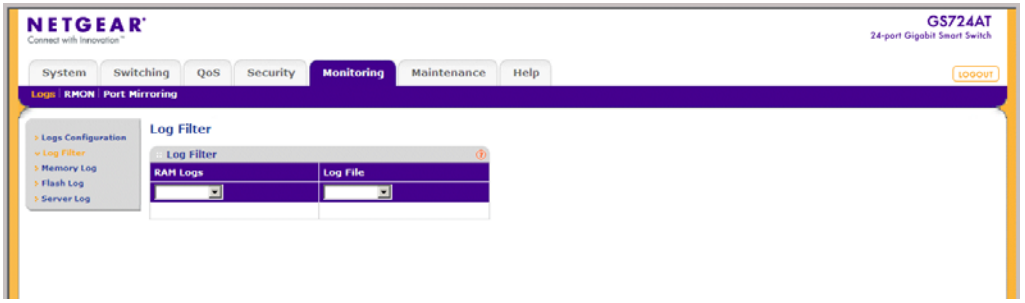


Figure 7-2

The Log Filter screen contains the following fields:

- **RAM Logs** – Select the minimum message severity level to appear in the RAM Log. The following are the available message severity levels:
  - Emergency – The highest warning level. If the device is down or not functioning properly, an emergency log message is saved to the specified logging location.
  - Alert – The second highest warning level. An alert log is saved, if there is a serious device malfunction; for example, all device features are down.
  - Critical – The third highest warning level. A critical log is saved if a critical device malfunction occurs; for example, two device ports are not functioning, while the rest of the device ports remain functional.
  - Error – A device error has occurred; for example, if a single port is offline.
  - Warning – The lowest level of a device warning. The device is functioning, but an operational problem has occurred.
  - Notice – Provides device information.
  - Informational – Provides device information.

  - Debug – Provides debugging messages.

- **Log File** – Select the minimum message severity level to appear in the log file. The following are the available message severity levels:
  - Emergency – The highest warning level. If the device is down or not functioning properly, an emergency log message is saved to the specified logging location.
  - Alert – The second highest warning level. An alert log is saved, if there is a serious device malfunction; for example, all device features are down.
  - Critical – The third highest warning level. A critical log is saved if a critical device malfunction occurs; for example, two device ports are not functioning, while the rest of the device ports remain functional.
  - Error – A device error has occurred; for example, if a single port is offline.
  - Warning – The lowest level of a device warning. The device is functioning, but an operational problem has occurred.
  - Notice – Provides device information.
  - Informational – Provides device information.
  - Debug – Provides debugging messages.

2. Select the minimum severity level for RAM logs.

3. Select the minimum severity level for FLASH logs.

4. Click **Apply** to update the device.

Memory Log

The Memory Log screen contains all system logs in a chronological order that are saved in RAM (Cache).

To view the Memory Log screen:

1. Click **Monitoring > Logs > Memory Log**. The Memory Log screen displays:

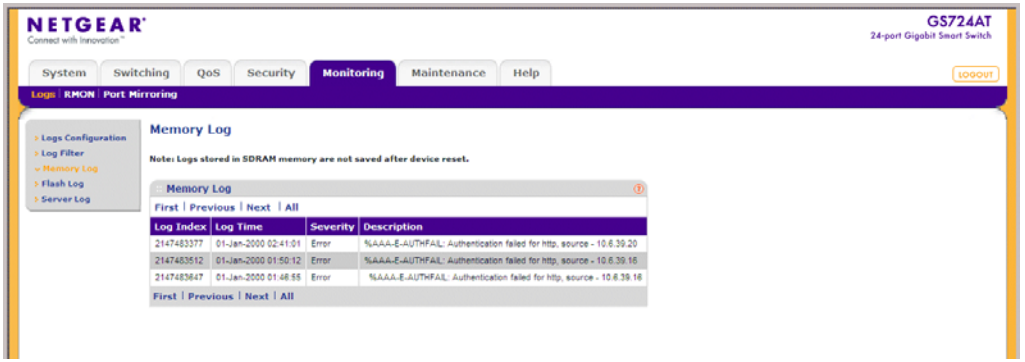


Figure 7-3

The Memory Log screen contains the following fields:

- **Log Index** – Displays the log number.
- **Log Time** – Displays the time at which the log was generated.
- **Severity** – Displays the log severity and urgency level. The following are the available log severity levels:
  - Emergency – The highest warning level. If the device is down or not functioning properly, an emergency log message is saved to the specified logging location.
  - Alert – The second highest warning level. An alert log is saved, if there is a serious device malfunction; for example, all device features are down.
  - Critical – The third highest warning level. A critical log is saved if a critical device malfunction occurs; for example, two device ports are not functioning, while the rest of the device ports remain functional.
  - Error – A device error has occurred; for example, if a single port is offline.
  - Warning – The lowest level of a device warning. The device is functioning, but an operational problem has occurred.
  - Notice – Provides device information.
  - Informational – Provides device information.
  - Debug – Provides debugging messages.
- **Description** – Displays the log message text.

2. Click **Refresh** or **Clear Logs** to refresh or reset the Memory Logs screen.

Flash Log

The Flash Log screen contains information about log entries saved to the log file in Flash, including the time the log was generated, the log severity, and a description of the log message. The message log is available after reboot.

To view the message logs in Flash:

1. Click **Monitoring > Logs > Flash Log**. The Flash Log screen displays:

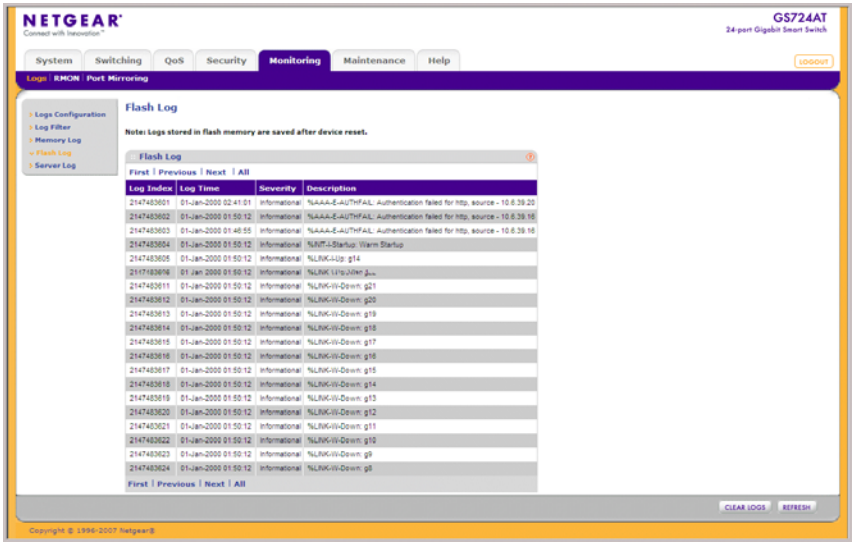


Figure 7-4

The Flash Log screen contains the following fields:

- **Log Index** – Displays the log number.
- **Log Time** – Displays the time at which the log was generated.
- **Severity** – Displays the log severity and urgency level. The following are the available log severity levels:
  - Emergency – The highest warning level. If the device is down or not functioning properly, an emergency log message is saved to the specified logging location.
  - Alert – The second highest warning level. An alert log is saved, if there is a serious device malfunction; for example, all device features are down.

  - Critical – The third highest warning level. A critical log is saved if a critical device malfunction occurs; for example, two device ports are not functioning, while the rest of the device ports remain functional.
  - Error – A device error has occurred; for example, if a single port is offline.
  - Warning – The lowest level of a device warning. The device is functioning, but an operational problem has occurred.
  - Notice – Provides device information.
  - Informational – Provides device information.
  - Debug – Provides debugging messages.
- **Description** – Displays the log message text.

2. Click **Refresh** or **Clear Logs** to refresh or reset the Flash Logs screen.

Server Log

The Server Log screen contains information for viewing and configuring the remote log servers. New log servers can be defined and the log severity sent to each server.

To configure remote log servers:

1. Click **Monitoring > Logs > Server Log**. The Server Log screen displays:

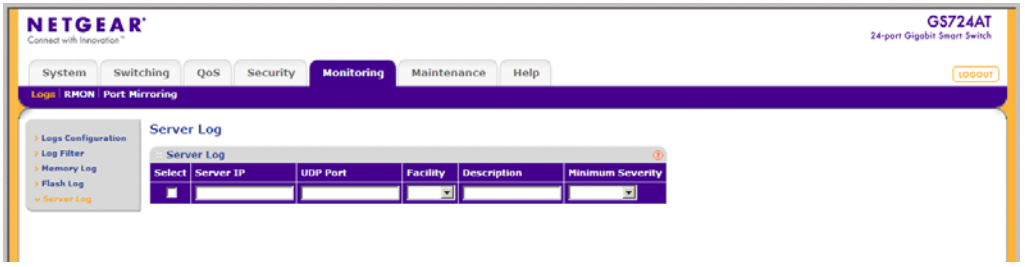


Figure 7-5

The Server Log screen contains the following fields:

- **Server IP** – Enter the server's IP address to which logs can be sent.
- **UDP Port** – Enter the UDP port to which the server logs are sent. The possible range is 1 – 65535. The default value is 514.

- **Facility** – Select an application from which system logs are sent to the remote server. Only one facility can be assigned to a single server. If a second facility level is assigned, the first facility is overridden. All applications defined for a device utilize the same facility on a server. The field default is Local 0. The possible field values are Local 0 - Local 7.
- **Description** – Enter a user-defined server description.
- **Minimum Severity** – Select the minimum severity level for which logs are sent to the server. For example, if Notice is selected, all logs with a severity level of Notice and higher are sent to the remote server. The default value is Informational. The possible field values are:
  - Emergency – The highest warning level. If the device is down or not functioning properly, an emergency log message is saved to the specified logging location.
  - Alert – The second highest warning level. An alert log is saved, if there is a serious device malfunction; for example, all device features are down.
  - Critical – The third highest warning level. A critical log is saved if a critical device malfunction occurs; for example, two device ports are not functioning, while the rest of the device ports remain functional.
  - Error – A device error has occurred; for example, if a single port is offline.
  - Warning – The lowest level of a device warning. The device is functioning, but an operational problem has occurred.
  - Notice – Provides device information.
  - Informational – Provides device information.
  - Debug – Provides debugging messages.

2. Select the server entry.
3. Enter the **Server IP** address in the provided field in the first row.
4. Enter the **UDP Port** number in the provided field in the first row.
5. Select the **Facility** assigned to the server from the list in the provided field in the first row.
6. Enter an optional server **Description** in the provided field in the first row.
7. Select the **Minimum Severity** level message sent to the server from the list in the provided field in the first row.
8. Click **Apply** to update the device.

To add a remote log server:

1. Click **Monitoring** > **Logs** > **Server Log**. The Server Log screen displays.
2. Enter the **Server IP** address in the provided field in the first row.
3. Enter the **UDP Port** number in the provided field in the first row.
4. Select the **Facility** assigned to the server from the list in the provided field in the first row.
5. Enter an optional server **Description** in the provided field in the first row.
6. Select the **Minimum Severity** level message sent to the server from the list in the provided field in the first row.
7. Click **Add** to update the device.

To remove a remote log server:

1. Click **Monitoring** > **Logs** > **Server Log**. The Server Log screen displays.
2. Select the log server entry.
3. Click **Delete** to remove the log server entry.

RMON

This section contains information for viewing Remote Monitoring Statistics. RMON Statistics allow network managers to view network traffic information from a single workstation.

The **RMON** menu contains the following options:

- "Basic"
- "Advanced"

Basic

The RMON **Basic** menu contains the following options:

- "Statistics"

Statistics

The RMON Basic Statistics screen contains fields for viewing information about device utilization and errors that occurred on the device.

To view RMON Basic Statistics:

1. Click **Monitoring > RMON > Basic > Statistics**. The RMON Basic Statistics screen displays:

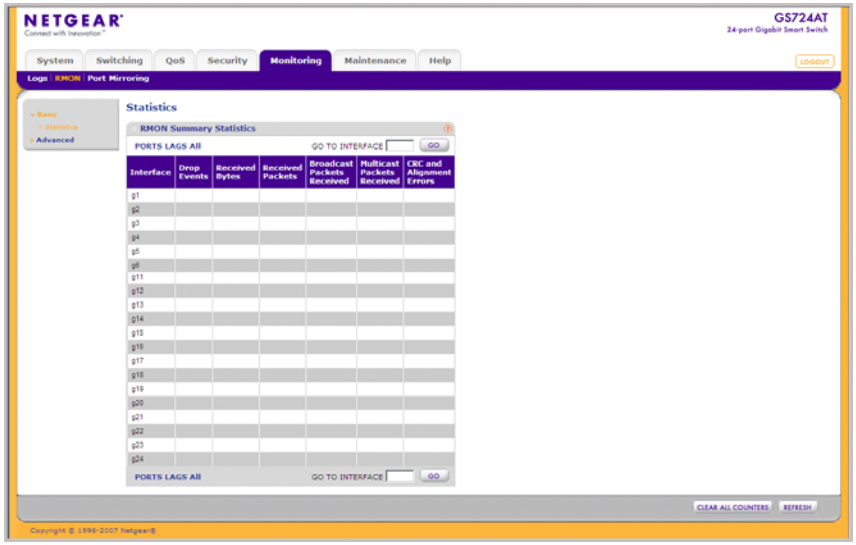


Figure 7-6

The RMON Basic Statistics screen contains the following fields:

- **Interface** – Displays the port or LAG for which statistics are displayed.
- **Drop Events** – Displays the number of dropped events that have occurred on the interface since the device was last refreshed.
- **Received Bytes** – Displays the number of octets received on the interface since the device was last refreshed. This number includes bad packets and FCS octets, but excludes framing bits.
- **Received Packets** – Displays the number of packets received on the interface, including bad packets, Multicast, and Broadcast packets, since the device was last refreshed.
- **Broadcast Packets Received** – Displays the number of good broadcast packets received on the interface since the device was last refreshed. This number does not include Multicast packets.
- **Multicast Packets Received** – Displays the number of good Multicast packets received on the interface since the device was last refreshed.

- **CRC & Alignment Errors** – Displays the number of CRC and Align errors that have occurred on the interface since the device was last refreshed.

2. Click **Refresh** or **Clear All Counters** to refresh or reset the RMON Basic Statistics screen.

Advanced

The RMON **Advanced** menu contains the following options:

- "Statistics"
- "History Control"
- "History Table"
- "Events Control"
- "Events Log"
- "Alarms"

Statistics

The RMON Advanced Statistics screen contains fields for viewing information about device utilization and errors that occurred on the device.

To view RMON Advanced Statistics:

1. Click **Monitoring >RMON > Advanced > Statistics**. The RMON Advanced Statistics screen displays:

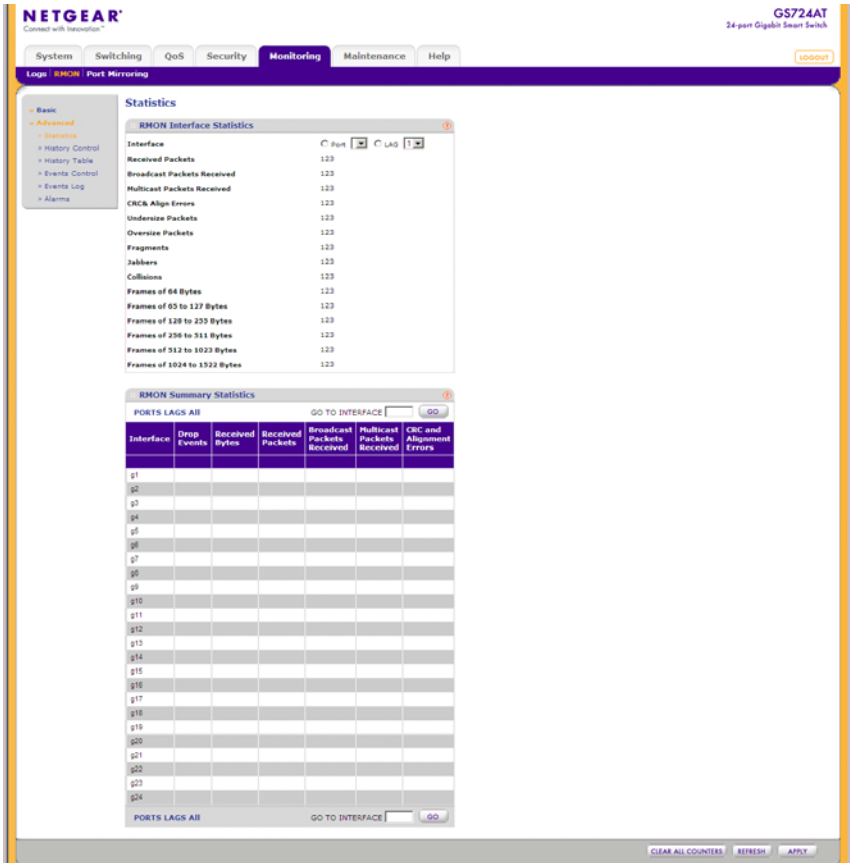


Figure 7-7

The RMON Advanced Statistics screen contains the following fields:

RMON Interface Statistics

- **Interface** – Select the device for which statistics are displayed. The possible field values are:
  - Port – Select the specific port for which RMON statistics are displayed.
  - LAG – Select the specific LAG for which RMON statistics are displayed.

- **Received Bytes** – Displays the number of octets received on the interface since the device was last refreshed. This number includes bad packets and FCS octets, but excludes framing bits.
- **Broadcast Packets Received** – Displays the number of good broadcast packets received on the interface since the device was last refreshed. This number does not include Multicast packets.
- **Multicast Packets Received** – Displays the number of good Multicast packets received on the interface since the device was last refreshed.
- **CRC & Align Errors** – Displays the number of CRC and Align errors that have occurred on the interface since the device was last refreshed.
- **Undersize Packets** – Displays the number of undersized packets (less than 64 octets) received on the interface since the device was last refreshed.
- **Oversize Packets** – Displays the number of oversized packets (over 1518 octets) received on the interface since the device was last refreshed.
- **Fragments** – Displays the number of fragments (packets with less than 64 octets, excluding framing bits, but including FCS octets) received on the interface since the device was last refreshed.
- **Jabbers** – Displays the total number of received packets that were longer than 1518 octets. This number excludes frame bits, but includes FCS octets that had either a bad Frame Check Sequence (FCS) with an integral number of octets (FCS Error) or a bad FCS with a non-integral octet (Alignment Error) number. The field range to detect jabbers is between 20 ms and 150 ms.
- **Collisions** – Displays the number of collisions received on the interface since the device was last refreshed.
- **Frames of 64 Bytes** – Displays the number of 64-byte frames received on the interface since the device was last refreshed.
- **Frames of 65 to 127 Bytes** – Displays the number of 65 to 127 byte frames received on the interface since the device was last refreshed.
- **Frames of 128 to 255 Bytes** – Displays the number of 128 to 255 byte frames received on the interface since the device was last refreshed.
- **Frames of 256 to 511 Bytes** – Displays the number of 256 to 511 byte frames received on the interface since the device was last refreshed.
- **Frames of 512 to 1023 Bytes** – Displays the number of 512 to 1023 byte frames received on the interface since the device was last refreshed.

- **Frames of 1024 to 1522 Bytes** – Displays the number of 1024 to 1522 byte frames received on the interface since the device was last refreshed.

RMON Summary Statistics

- **Interface** – Displays the port or LAG for which statistics are displayed.
- **Drop Events** – Displays the number of dropped events that have occurred on the interface since the device was last refreshed.
- **Received Bytes** – Displays the number of octets received on the interface since the device was last refreshed. This number includes bad packets and FCS octets, but excludes framing bits.
- **Received Packets** – Displays the number of packets received on the interface, including bad packets, Multicast, and Broadcast packets, since the device was last refreshed.
- **Broadcast Packets Received** – Displays the number of good broadcast packets received on the interface since the device was last refreshed. This number does not include Multicast packets.
- **Multicast Packets Received** – Displays the number of good Multicast packets received on the interface since the device was last refreshed.
- **CRC & Alignment Errors** – Displays the number of CRC and Align errors that have occurred on the interface since the device was last refreshed.

2. To view RMON Interface Statistics, select Port or LAG as the type of **Interface** and select the interface from the list in the provided field. The RMON Interface Statistics for the selected interface are displayed.
3. To view RMON Summary Statistics, select the interface and click **Go**.

To refresh or clear the RMON Advanced Statistics screen:

1. Open the RMON Advanced Statistics screen.
2. Click **Refresh** or **Cleear All Counters** to clear or reset the RMON Advanced Statistics screen.

History Control

The RMON History Control screen contains information about samples of data taken from ports. For example, the samples may include interface definitions or polling periods.

To configure RMON history information:

1. Click **Monitoring >RMON > Advanced > History Control**. The RMON History Control screen displays:

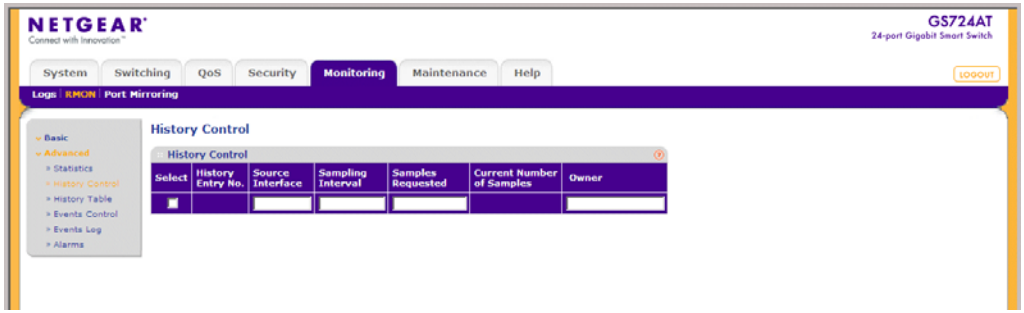


Figure 7-8

The RMON History Control screen contains the following fields:

- **History Entry No.** – Displays the entry number for the History Control Table screen.
- **Source Interface** – Enter the interface from which the history samples were taken.
- **Sampling Interval** – Enter in seconds the time that samples are taken from the ports. The field range is 1-3600. The default is 1800 seconds (equal to 30 minutes).
- **Samples Requested** – Enter the number of samples to be saved. The field range is 1-65535. The default value is 50.
- **Current Number of Samples** – Displays the current number of samples taken.
- **Owner** – Enter the RMON station or user that requested the RMON information.

2. Select the history control entry.
3. Enter the **Source Interface**, **Sampling Interval**, **Samples Requested** and **Owner** in the provided field in the first row.
4. Click **Apply** to update the device.

To add a history control entry:

1. Click **Monitoring >RMON > Advanced > History Control**. The RMON History Control screen displays.
2. Enter the **Source Interface**, **Sampling Interval**, **Samples Requested** and **Owner** in the provided field in the first row.
3. Click **Add** to update the device.

To remove a history control entry:

1. Click **Monitoring >RMON > Advanced > History Control**. The RMON History Control screen displays.
2. Select the history control entry.
3. Click **Delete** to remove the history control entry.

History Table

The RMON History Table screen contains interface specific statistical network samples. Each table entry represents all counter values compiled during a single sample.

To view the RMON History Table:

1. Click **Monitoring > RMON > Advanced > History Table**. The RMON History Table screen displays:

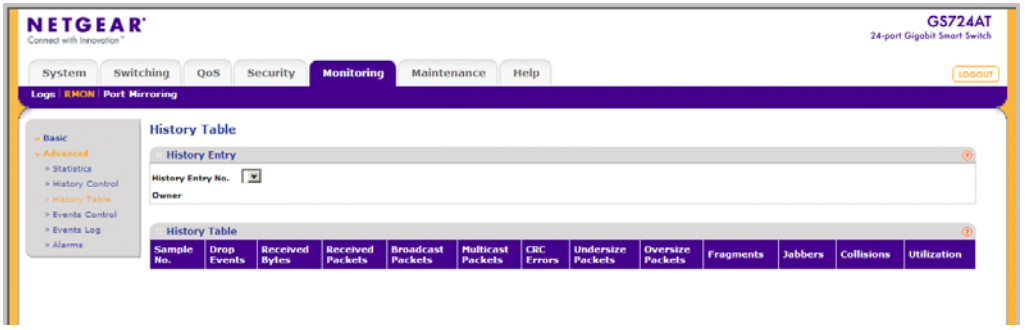


Figure 7-9

The RMON History Table screen contains the following fields:

History Entry

- **History Entry No.** – Select the entry number for the History Control Table screen.
- **Owner** – Displays the RMON station or user that requested the RMON information. The field range is 0-20 characters.

History Table

- **Sample No.** – Displays the sample number from which the statistics were taken.
- **Drop Events** – Displays the number of dropped events that have occurred on the interface since the device was last refreshed.

- **Received Bytes** – Displays the number of octets received on the interface since the device was last refreshed. This number includes bad packets and FCS octets, but excludes framing bits.
- **Received Packets** – Displays the number of packets received on the interface since the device was last refreshed, including bad packets, Multicast, and Broadcast packets.
- **Broadcast Packets** – Displays the number of good Broadcast packets received on the interface since the device was last refreshed. This number does not include Multicast packets.
- **Multicast Packets** – Displays the number of good Multicast packets received on the interface since the device was last refreshed.
- **CRC Errors** – Displays the number of CRC and Align errors that have occurred on the interface since the device was last refreshed.
- **Undersize Packets** – Displays the number of undersized packets (less than 64 octets) received on the interface since the device was last refreshed.
- **Oversize Packets** – Displays the number of oversized packets (over 1518 octets) received on the interface since the device was last refreshed.
- **Fragments** – Displays the number of fragments (packets with less than 64 octets, excluding framing bits, but including FCS octets) received on the interface since the device was last refreshed.
- **Jabbers** – Displays the total number of received packets that were longer than 1518 octets. This number excludes frame bits, but includes FCS octets that had either a bad Frame Check Sequence (FCS) with an integral number of octets (FCS Error) or a bad FCS with a non-integral octet (Alignment Error) number. The field range to detect jabbers is between 20 ms and 150 ms.
- **Collisions** – Displays the number of collisions received on the interface since the device was last refreshed.
- **Utilization** – Displays the percentage of the interface utilized.

2. Select the **History Entry No.** from the list in the provided field. The statistics are displayed.

3. To refresh the RMON History Table screen, click **Refresh**.

Events Control

The RMON Events Control screen contains fields for defining RMON events.

To configure RMON events control:

1. Click **Monitoring > RMON > Advanced > Events Control**. The RMON Events Control screen displays:

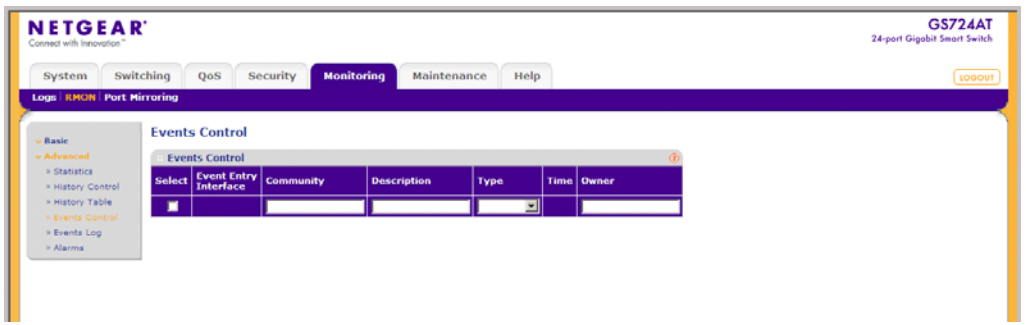


Figure 7-10

The RMON Events Control screen contains the following fields:

- **Event Entry Interface** – Displays the event.
- **Community** – Enter the community to which the event belongs.
- **Description** – Enter the user-defined event description.
- **Type** – Select the event type. Possible values are:
  - None – No event has occurred.
  - Log – The event is a log entry.
  - Trap – The event is a trap.
  - Log & Trap – The event is both a log entry and a trap.
- **Time** – Displays the time that the event occurred.
- **Owner** – Enter the device or user that defined the event.

2. Select the events control entry.
3. Enter the **Community**, **Description** and **Owner** in the provided field in the first row.
4. Select the event **Type** from the list in the provided field in the first row.
5. Click **Apply** to update the device.

To add an events control entry:

1. Click **Monitoring > RMON > Advanced > Events Control**. The RMON Events Control screen displays.
2. Enter the **Community**, **Description** and **Owner** in the provided field in the first row.
3. Select the event **Type** from the list in the provided field in the first row.
4. Click **Add** to update the device.

To remove an events control entry:

1. Click **Monitoring > RMON > Advanced > Events Control**. The RMON Events Control screen displays.
2. Select the events control entry.
3. Click **Delete** to remove the events control entry.

Events Log

The RMON Events Log screen contains a list of RMON events.

To view RMON events logs:

1. Click **Monitoring > RMON > Advanced > Events Log**. The RMON Events Log screen displays

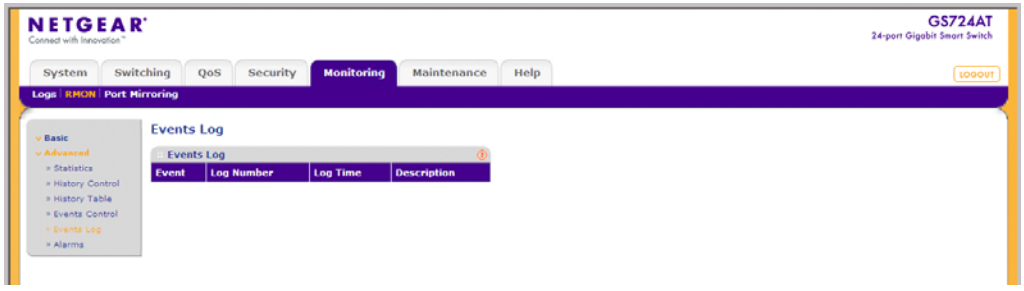


Figure 7-11

The RMON Events Log screen contains the following fields:

- **Event** – Displays the RMON Events.
- **Log Number**– Displays the log number.
- **Log Time** – Displays the time when the log entry was entered.
- **Description** – Displays the log entry description.

2. To refresh the RMON Events Log screen, click **Refresh**.

Alarms

The RMON Alarms screen contains fields for setting network alarms. Network alarms occur when a network problem or event, is detected. Rising and falling thresholds generate events.

To set RMON alarms:

1. Click **Monitoring > RMON** > **Advanced > Alarms**. The RMON Alarms screen displays:

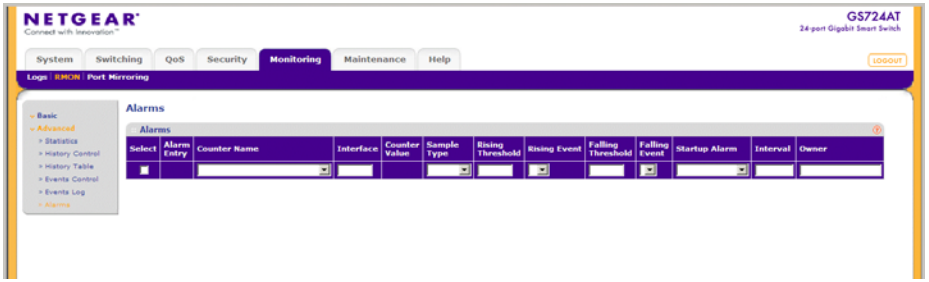


Figure 7-12

The RMON Alarms screen contains the following fields:

- **Alarm Entry** – Displays the alarm entry.
- **Counter Name** – Select the MIB variable.
- **Interface** – Enter the port or LAG interface.
- **Counter Value** – Displays the selected MIB variable value.
- **Sample Type** – Select the sampling method for the selected variable and comparing the value against the thresholds. The possible field values are:
  - Absolute – Compares the values directly with the thresholds at the end of the sampling interval.
  - Delta – Subtracts the last sampled value from the current value. The difference in the values is compared to the threshold.
- **Rising Threshold** – Enter the rising counter value that triggers the rising threshold alarm. The rising threshold is presented on top of the graph bars. Each monitored variable is designated a color.
- **Rising Event** – Enter the event number by which rising alarms are reported.

- **Falling Threshold** – Enter the falling counter value that triggers the falling threshold alarm. The falling threshold is graphically presented on top of the graph bars. Each monitored variable is designated a color.
- **Falling Event** – Enter the event number by which falling alarms are reported.
- **Startup Alarm** – Select the trigger that activates the alarm generation. Rising is defined by crossing the threshold from a low-value threshold to a higher-value threshold. The possible field values are:
  - Rising Alarm – The alarm is triggered by the rising counter crossing the rising threshold value.
  - Falling Alarm – The alarm is triggered by the falling counter crossing the falling threshold value.
  - Rising and Falling – The alarm is triggered by either the rising counter crossing the rising threshold value or the falling counter crossing the falling threshold value.
- **Interval** – Enter the alarm interval time in seconds.
- **Owner** – Enter the device or user that defined the alarm.

2. Select the alarm entry.
3. Select the **Counter Name** from the list of MIB variable values in the provided field in the first row.
4. Enter the **Interface** in the provided field in the first row.
5. Select the **Sample Type** from the list in the provided field in the first row.
6. Select the **Startup Alarm** from the list in the provided field in the first row.
7. If you selected Rising Alarm or Rising and Falling as the **Startup Alarm**, enter the **Rising Threshold** and select the **Rising Event** number in the provided fields in the first row.
8. If you selected Falling Alarm or Rising and Falling as the **Startup Alarm**, enter the **Falling Threshold** and select the **Falling Event** number in the provided fields in the first row.
9. Enter the **Interval** and **Owner** in the provided fields in the first row.
10. Click **Apply** to update the device.

To add an alarm entry:

1. Click **Monitoring > RMON** > **Advanced > Alarms**. The RMON Alarms screen displays.

2. Select the **Counter Name** from the list of MIB variable values in the provided field in the first row.
3. Enter the **Interface** in the provided field in the first row.
4. Select the **Sample Type** from the list in the provided field in the first row.
5. Select the **Startup Alarm** from the list in the provided field in the first row.
6. If you selected Rising Alarm or Rising and Falling as the **Startup Alarm**, enter the **Rising Threshold** and select the **Rising Event** number in the provided fields in the first row.
7. If you selected Falling Alarm or Rising and Falling as the **Startup Alarm**, enter the **Falling Threshold** and select the **Falling Event** number in the provided fields in the first row.
8. Enter the **Interval** and **Owner** in the provided fields in the first row.
9. Click **Add** to update the device.

To remove an events control entry:

1. Click **Monitoring > RMON** > **Advanced > Alarms**. The RMON Alarms screen displays.
2. Select the alarm entry.
3. Click **Delete** to remove the alarm entry.

Port Mirroring

Port mirroring monitors and mirrors network traffic by forwarding copies of incoming and outgoing packets from one port to a monitoring port. Port mirroring can be used as a diagnostic tool as well as a debugging feature. Port mirroring also enables switch performance monitoring.

Network administrators can configure port mirroring by selecting a specific port from which to copy all packets, and other ports to which the packets are copied. The device supports one destination port and up to eight source ports.

The **Port Mirroring** menu contains the following option:

- “Port Mirroring”

Port Mirroring

To define port mirroring:

1. Click **Monitoring** > **Port Mirroring** > **Port Mirroring**. The Port Mirroring screen displays:

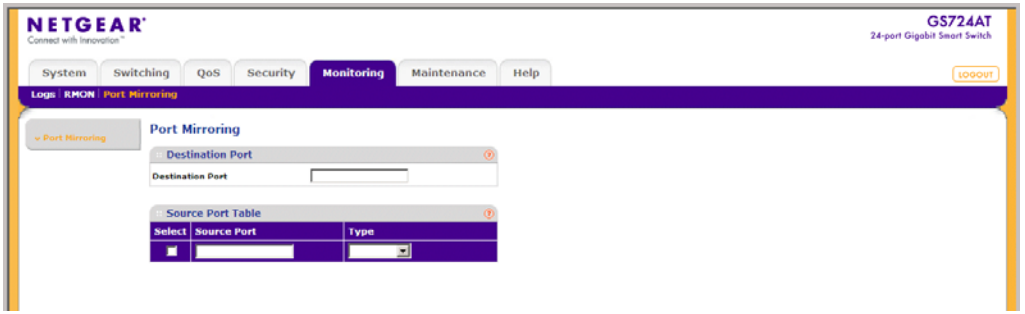


Figure 7-13

The Port Mirroring screen contains the following fields:

Destination Port

- **Destination Port** – Enter the port to which port traffic is copied.

Source Port Table

- **Source Port** – Enter the port from which the packets are mirrored.
- **Type** – Select the port mode configuration for port mirroring. The possible field values are:
  - TX Only – Port mirroring is configured on transmitting ports only.
  - RX Only – Port mirroring is configured on receiving ports only.
  - TX and RX – Port mirroring is configured on both receiving and transmitting ports. This is the default value.

2. Enter the **Destination Port** in the provided field.
3. Select the source port entry.
4. Select the port mirroring **Type** from the list in the provided field in the first row.
5. Click **Apply** to update the device.

To add a source port entry:

1. Click **Monitoring** > **Port Mirroring** > **Port Mirroring**. The Port Mirroring screen displays.

2. Enter the **Source Port** in the provided field in the first row.
3. Select the port mirroring **Type** from the list in the provided field in the first row.
4. Click **Add** to update the device.

To remove a source port entry:

1. Click **Monitoring > Port Mirroring > Port Mirroring**. The Port Mirroring screen displays.
2. Select the source port entry.
3. Click **Delete** to remove the source port entry.

Chapter 8
Maintenance

Using the Maintenance Options

The navigation pane at the top of the web browser interface contains a Maintenance tab that enables you to manage your GS700AT Series Smart Switch with features under the following main menu options:

- "Reset"
- "Upload"
- "Download"
- "File Management"
- "Troubleshooting"

The description that follows in this chapter describes configuring and managing maintenance options in the GS700AT Series Smart Switch.

Reset

The **Reset** menu contains the following options:

- "Device Reboot"
- "Factory Default"

Device Reboot

The Device Reboot screen resets the device.

To reset the device:

1. Click **Maintenance > Reset > Device Reboot**. The Device Reboot screen displays:

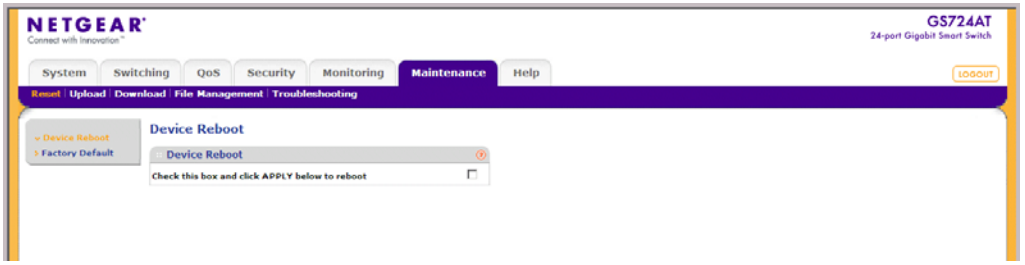


Figure 8-1

2. Check the confirmation box.
3. Click **Apply** to reboot the device.

Factory Default

The Factory Default screen allows network managers to reset the device to the factory defaults shipped with the switch. Restoring factory defaults results in erasing the configuration file.

	Note: Selecting this option automatically reboots the device.

To reset the device to the factory defaults:

1. Click **Maintenance** > **Reset > Factory Default**. The Factory Default screen displays:

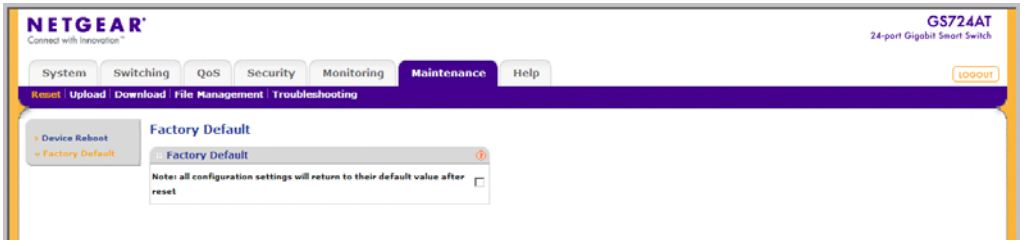


Figure 8-2

2. Check the confirmation box.
3. Click **Apply** to reset the device to the factory defaults.

Upload

The **Upload** menu contains the following option:

- "Upload"

Upload

System Files can be backed up using the Upload screen.

To back up files:

1. Click **Maintenance > Upload**. The Upload screen displays:

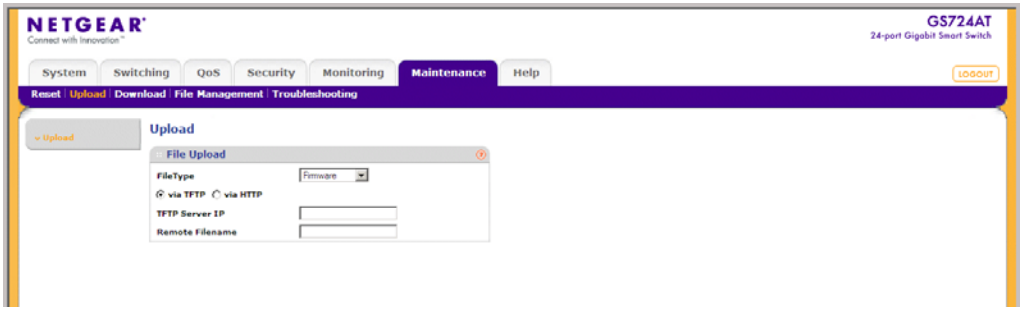


Figure 8-3

The Upload screen contains the following fields:

- **File Type** – Enter the type of file to be uploaded. The possible field values are:
  - Firmware – Upload the Firmware File.
  - Configuration – Upload the Configuration File.
- **via TFTP** – Select to upload the Firmware or Configuration File to the TFTP Server.
- **via HTTP** – Select to upload the Configuration File via the web browser interface (HTTP).
- **TFTP Server IP** – Enter the TFTP Server IP Address to which the Firmware or Configuration file is uploaded.

- **Remote Filename** – Enter the name of the destination file on the TFTP server.

2. Select Firmware or Configuration as the upload **File Type** from the provided field.
3. Select whether to upload **via TFTP** or **via HTTP**. If you selected the Firmware File to upload, you must select **via TFTP**.
4. If you selected **via TFTP**, enter the **TFTP Server IP** address in the provided field.
5. If you selected **via TFTP**, enter the **Remote Filename** in the provided field.
6. Click **Apply** to upload the file.

Download

The **Download** menu contains the following option:

- "Download"

Download

System files can be downloaded using the Download screen.

To download system files:

1. Click **Maintenance > Download**. The Download screen displays:

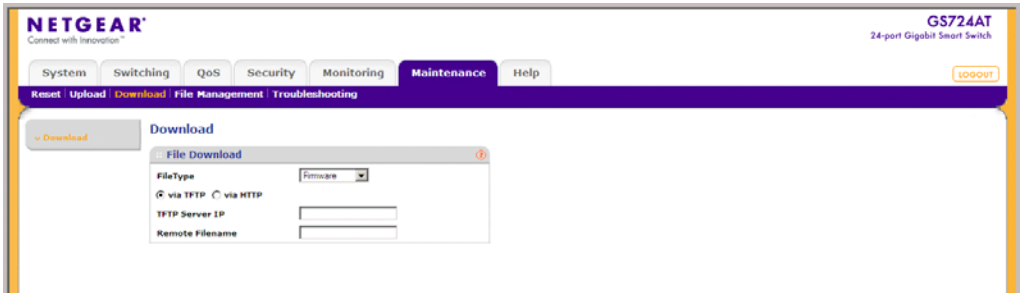


Figure 8-4

The Download screen contains the following fields:

- **File Type** – Enter the file type to be downloaded. The possible field values are:
  - Firmware – Download the Firmware file.
  - Boot File – Download the Boot file.

  - Configuration – Download the Configuration file.
- **via TFTP** – Select to download the file from the TFTP Server.
- **via HTTP** – Select to download the file via the web browser interface (HTTP) and enter the file name in the provided box.
- **TFTP Server IP** – Enter the TFTP Server IP Address from which the Firmware, Boot or Configuration file is downloaded.
- **Remote Filename** – Enter the destination file name to be downloaded.

2. Select Firmware, Boot File or Configuration as the download **File Type** from the provided field.
3. Select whether to download **via TFTP** or **via HTTP**.
4. If you selected **via HTTP**, enter the file name in the provided box.
5. If you selected **via TFTP**, enter the **TFTP Server IP** address in the provided field.
6. If you selected **via TFTP**, enter the **Remote Filename** in the provided field.
7. Click **Apply** to download the file. You must reboot the device for the downloaded file settings to take effect. See "Device Reboot" for detailed instructions on rebooting the device.

File Management

The **File Management** menu contains the following option:

- "Active Image"

Active Image

The Active Image screen enables the user to select which image will be set as active after the next reset.

To define the active image:

1. Click **Maintenance** > **File Management** > **Active Image**. The Active Image screen displays:

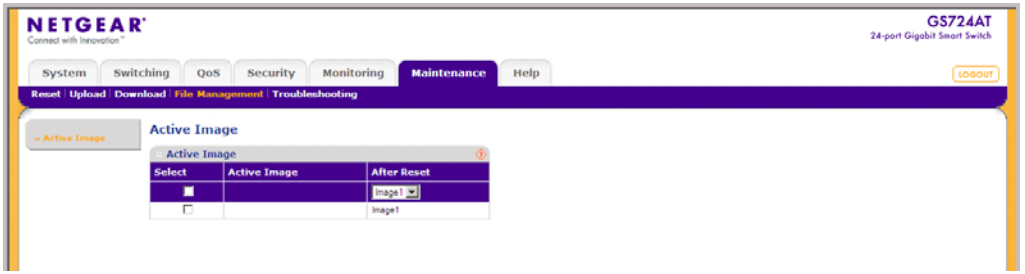


Figure 8-5

The Active Image screen contains the following fields:

- **Active Image** – Displays the image file which is currently active on the unit.
- **After Reset** – Select the image file that is active after the specific unit is reset. The possible field values are:
  - Image 1 – Activate Image file 1 after the device is reset.
  - Image 2 – Activate Image file 2 after the device is reset.

2. Select the image file to be active in the **After Reset** provided field in the first row.
3. Click **Apply** to update the device. You must reset the device for the active image setting to take effect. See "Reset" for detailed instructions on resetting the device.

Troubleshooting

The **Troubleshooting** menu contains the following option:

- "Diagnostics"

Diagnostics

The **Diagnostics** menu contains the following option:

- "Cable Test"

Cable Test

The Cable Test screen contains fields for performing tests on copper cables. Cable testing provides information about where errors occurred in the cable, the last time a cable test was performed, and the type of cable error that occurred. The tests use Time Domain Reflectometry (TDR) technology to test the quality and characteristics of a copper cable attached to a port. Cables up to 120 meters long can be tested. Cables are tested when the ports are in the down state, with the exception of the Approximated Cable Length test.

To test cables:

1. Click **Maintenance** > **Troubleshooting** > **Cable Test**. The Cable Test screen displays:

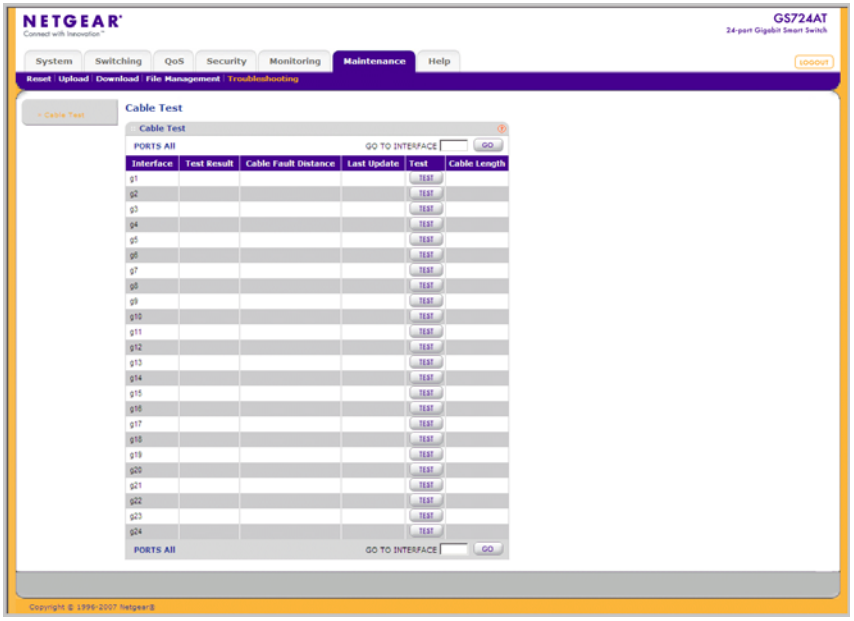


Figure 8-6

The Cable Test screen contains the following fields:

- **Interface** – Enter the port to which the cable is connected.
- **Test Result** – Displays the cable test results. Possible values are:
  - No Cable – A cable is not connected to the port.
  - Open Cable – A cable is connected on only one side.
  - Short Cable – A short has occurred in the cable.

– OK – The cable passed the test.

- **Cable Fault Distance** – Displays the distance from the port where the cable error occurred.
- **Last Update** – Displays the last time the port was tested.
- **Test** – Click **TEST** to perform the cable tests for the selected port.
- **Cable Length** – Displays the approximate cable length. This test can only be performed when the port is up and operating at 100Mbps or 1 Gbps.

2. On the row containing the interface to be tested, click **TEST** to test the cable connected to the interface.

Chapter 9
Online Help

Online Help

The navigation pane at the top of the web browser interface contains a Help tab that provides access to informational services including support and an online user guide in PDF format. The Help menu contains the following options:

- "Support"
- "User Guide"

The description that follows in this chapter covers these features.

Support

The Support screen provides access to the NETGEAR online support site at *www.netgear.com*.

To access the Support screen:

1. Click **Help** > **Online Help** > **Support**. The Online Help menu opens and the Support screen displays:

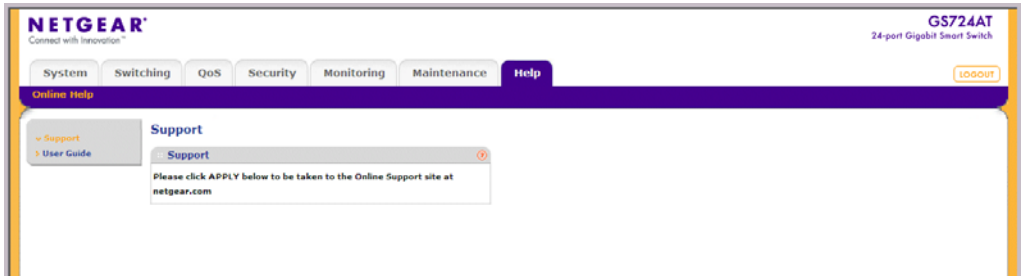


Figure 9-1

2. Click **Apply** to go to the NETGEAR Online Support site at *www.netgear.com*.

User Guide

The User Guide screen provides access to the online User Guide.

To view the User Guide screen:

1. Click **Help** > **Online Help > User Guide**. The User Guide screen displays:

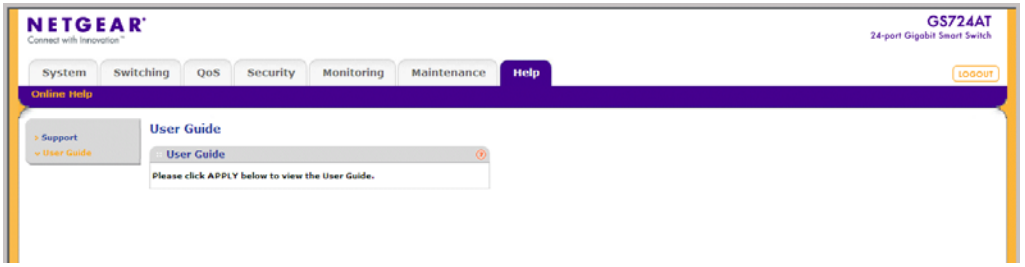


Figure 9-2

2. Click **Apply** to open a window and display the User Guide in PDF format.

Appendix A
Default Settings

This appendix provides default settings for the NETGEAR Model GS700AT Series Smart Switch. You can always configure the switch to default settings by using the Factory Reset function from a Web browser.

Table A-1. Default Settings

Feature	GS700AT Series Default Setting
Port Speed	Auto-negotiation
Port Duplex	Auto-negotiation
Flow Control (half duplex)	Disabled
Flow Control (full duplex)	Disabled
IP Configuration	DHCP enabled
Password	password
VLAN	802.1q based VLAN
Link Aggregation (Trunk)	Disabled
Traffic Prioritization (QoS)	Optimized for flow control, all ports set normal priority

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